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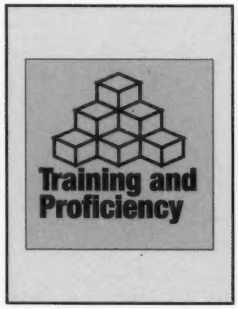
On the Cover: *J–3 Cub at Potomac Airfield, MD. Photo by H. Dean Chamberlain*



Tips for students and CFI's. See pages 6–22.

Primary Category aircraft explained. See page 23.

CHALLENGE2000

AN FAA REVIEW OF REGULATION AND CERTIFICATION

by Phyllis Anne Duncan

FAA Administrator David R. Hinson announced on July 13 that FAA would begin a comprehensive review of FAA regulation and certification capabilities. Hinson said that the review is essential to determine what the agency will need to do to address the increasing challenges of regulating the aviation industry and certifying rapidly changing technologies as we enter the 21st century.

Hinson commissioned a high-level task force to "take a fresh look at the way we do things." The task force is to look at all agency regulation and certification policies and procedures. Hinson expects the review to last six to nine months. The task force had its first meeting on July 26.

Challenge 2000 is part of Hinson's mandate from President Clinton and Transportation Secretary Peña to evaluate the structure and function of the agency, to fix any existing problems he might find, to redefine and reorganize as necessary, and to fine-tune processes and organization as appropriate. Hinson has already reorganized the FAA into six lines of business, increased accountability, and established better ways to measure productivity.

"The only assumption we're starting with," Hinson said, "is that it's always possible to do a better job. We want to take a hard look at every aspect of our regulation and certification work—not only what we do, but also how and why we do it."

The Challenge 2000 task force will be chaired by Barry Valentine, FAA Assistant Administrator for Policy, Planning, and International Aviation. The task force's initiatives will consist of three components:

1. A team of private management consultants and aviation experts will conduct an independent examination of regulation and certification processes.
2. Gen. James Abrahamson, who chairs the FAA Research and Development Advisory Committee, and other advisory committee members under his direction will evaluate the FAA's relationship to the technology environment and the agency's ability to respond strategically to rapid technological changes.
3. A team of senior FAA officials, will assist other members of the task force, provide essential expertise and perspective on the FAA and its current practices, facilitate the review, and carry out Hinson's mandate to "make sure that the FAA is as well prepared tomorrow as we are today to fulfill our mission of ensuring the safety and efficiency of U.S. aviation."

In addition to the Challenge 2000 review, Hinson and Associate Administrator for Regulation and Certification Anthony J. Broderick have been working on several near-term initiatives: an aggressive public education program to enhance safety by encouraging passengers to remain seated with seat belts fastened during flights; a fast-track process for the FAA's top five rulemaking initiatives to enhance safety; voluntary accreditation of parts suppliers; and a status report on the

safety action initiatives that were developed jointly by government, labor, and industry following the nationwide Safety Summit in January.

Hinson praised FAA employees for their extraordinary dedication in helping to create and maintain the world's safest aviation system and their success in responding to changes in the aviation industry.

Challenge 2000 is not aimed at a specific problem or intended to bring a predetermined result. Instead, Hinson said, "It's an effort to avoid future problems by applying 'breakthrough thinking' to regulation and certification.

"I can't predict exactly what this review will tell us, but I believe it will provide the information and the tools we need to chart a true course from where we are now to where we need to be in the future." ■

Regulation and Certification Organization Fact Sheet

The office of the Associate Administrator for Regulation and Certification plays a major and vital role in the FAA's mission to ensure the safety and efficiency of U.S. aviation.

The organization has regulatory, certification, and oversight responsibility for:

- 120 major air carriers
- 500 foreign carriers that fly to the U.S.
- more than 3,100 commuter airlines and on-demand operators
- approximately 680,000 active pilots
- 202,000 aircraft of all types
- more than 2,800 manufacturers
- 4,800 repair stations—both foreign and domestic—around the world

Regulation and Certification employees perform more than 400,000 safety inspections annually, and the organization is responsible for several major FAA programs and initiatives, including:

- the aviation safety rulemaking program
- the international aviation safety assessment program
- international harmonization of safety rules
- approval and oversight of industry drug and alcohol testing programs
- accident investigation and the FAA response to recommendations from the NTSB
- the Aviation Safety Program

A Change is in the Air!

by John Wensel

Since the article, "Don't Forget the Children," was published in the April 1994 issue of *FAA Aviation News,* the FAA's Civil Aeromedical Institute (CAMI) completed a study to evaluate whether the FAA regulations regarding crashworthiness requirements for adult passenger seats and the standards applicable to child restraint systems were consistent for *transport category aircraft.* The following is a summary of CAMI's findings which general aviation pilots may want to consider. Some of the most serious issues identified by CAMI concern child restraints commonly referred to as shield-type booster seats, vest-and harness-type child restraint systems, and belly belts.

Booster seats

The shield-type booster seat, in combination with other factors, contributed to an abdominal pressure measurement higher than in other means of protection. As noted in the original article, airline seats are not rigid and may breakover under their own inertia or when struck by a passenger. This represents a potential source of pressure and force to the occupant of a backless child restraint system. In a typical seat used by an airline, shield-type booster seats do not provide adequate protection from aft row occupant impact forces on the seat back than other available means of protection. The movement of the aft row adult passenger may expose the child to an impact from behind and to being crushed between the airplane seat back and the booster seat shield.

CAMI tests demonstrate that booster seats do not adequately protect children in the air. When an adult-size test dummy was seated behind a breakover type seat occupied by a child-size test dummy seated in a shield-type booster seat, the abdominal load was 59.5 pounds per square inch (psi). When the same child-size test dummy was restrained by the seat's lap belt, the abdominal load was 37.6 psi. This represents a 37% reduction in the force applied to a child's abdomen. The FAA believes that there is a relationship between abdominal loading and injury.

Vest- and Harness-Type Child Restraint Systems

Harness-type child restraints tested at CAMI did not provide adequate restraint to prevent a serious impact with a seat back in front of the child occupant and a rebound impact with the occupant's own seat because of the location of the safety belt anchors for an airplane seat.

In an accident, these systems allow unacceptable levels of body excursion and/or submarining (the occupant's lower body slides underneath the restraint system). The FAA believes that if a child under two falls in the weight use limits (25-50 pounds) recommended by vest and harness manufacturers, the child would be safer in a passenger seat restrained by a lap belt than in a vest- and harness-type device if no other approved systems were available. However, the FAA believes that a child weighing between 20 and 40 pounds would be better protected in a forward facing child restraint system than in a lap belt. In addition, CAMI testing revealed that lap belts provide a superior level of protection for children weighing more than 40 pounds to that provided by harnesses and booster seats.

Belt-Positioning Booster Seats

These seats require shoulder harnesses, and airplanes used in airline operations do not have passenger shoulder harnesses. In addition, in other aircraft that may have shoulder harnesses for passengers, the FAA believes that during an aircraft crash there is a likelihood that a belt-positioning booster seat will shift from the passenger seat, causing a degradation in the performance of that child restraint system.

Belly Belts

These systems allowed the test dummy to make severe contact with the back of the seat in the row in front of the test dummy. The child also may be crushed by the forward bending motion of the adult to whom the child is attached.

New Regulations

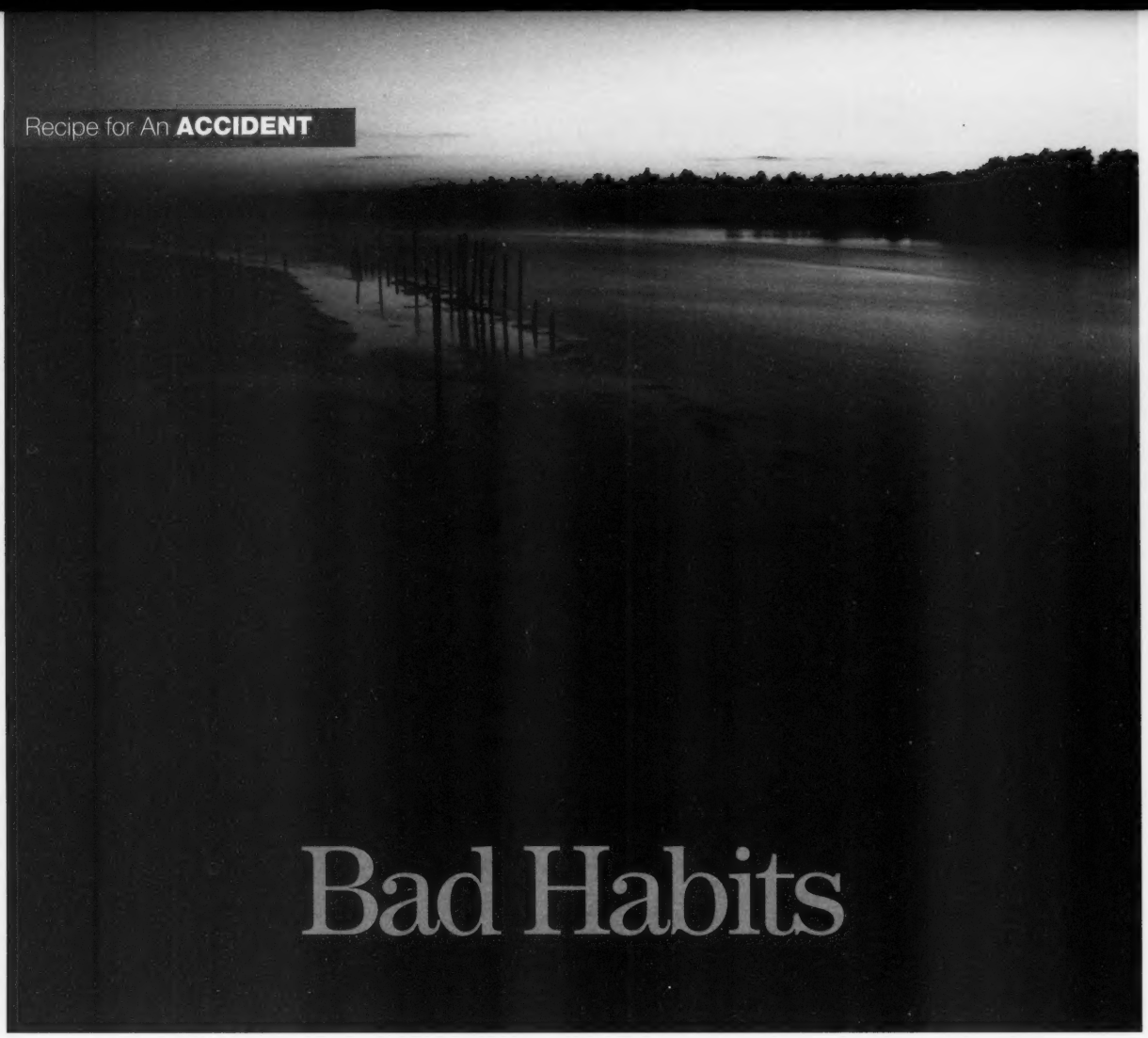
The National Highway Traffic Safety Administration (NHTSA) and the FAA developed a common approach to the approval of child restraints during the mid-1980's. Federal Motor Vehicle Safety Standards (FMVSS) No. 213 was amended to provide criteria for the certification of child restraints that were appropriate for both aircraft and automobiles. FMVSS, as revised, is the current U.S. standard used to approved child restraint systems. On July 21, 1994, NHTSA issued an amendment to its standard requiring that belt-positioning booster seats be labeled with a statement that they are not certified for use on aircraft.

On June 9, 1995, the FAA issued a notice of proposed rulemaking that proposes to ban the use of booster seat and vest- and harness-type child restraint systems in aircraft during takeoff, landing, and movement on the surface. Because of the safety issues involved, these child restraint systems should not be used in an aircraft, and if the proposed changes to the rules become effective, they will not be approved for use in aircraft.

Recommendations

Considering the CAMI study the FAA believes that forward facing child restraint devices are superior to vest- and harness-type devices, booster seats, belly belts, and the holding of children on laps. The FAA recommends the use of a rear facing child restraint system for children weighing under 20 pounds and a forward facing system for children weighing between 20 and 40 pounds. Children weighing over 40 pounds should use the standard lap belt that is attached to all airline seats. ■

Recipe for An **ACCIDENT**



Bad Habits

by Dennis Ward

I decided to have an accident in my airplane the last week of August 1980. My 1974 *Scout* was really a beautiful airplane and great transportation. I had paid $15,000 to a man in Chanute, KS for this 300-hour, absolutely showroom condition, always hangared, waxed-once-a-month, scratchless 8GCBC.

So, I took off on August 27, 1980, about 7 a.m. on one of those clear, frosty morning when your 180 hp Lycoming seems to develop 200 hp. My airplane and I were headed to a small lake 80 miles south-southwest of Lake Minchumina, AK to drop off some gas for fellow moose hunters and then over to the Mud River to do a little scouting for myself.

When I arrived at the lake, my two friends, who were both in float planes, had flagged about 800' of strip in the grass on the lakeshore. They assured me that it was hard and no problem. Well, being the 2,000-hour "bush pilot" that I was, I did it "by the book." I told them that I wasn't going to land because the grass was so tall that I couldn't see the ground underneath. However, I said I would put my wheels down and "track" it. If it felt okay, I'd consider landing.

At 60 mph, I clipped the flag off the grass at my touchdown point (gives you an idea of how tall the grass was) and gently set my 24" tires on the ground. After about 600' of tracking, my brain told my left hand to go to full throttle and my right hand to ease the stick back. In the blink of an eye, the nose pitched forward into some pond muck, and my beautiful *Scout* was now decelerating through about 40 mph tail first; i.e., *INVERTED!* Some aircraft are constructed to fly inverted, but tail first at 15' AGL was definitely not in the pilot's operating handbook.

Now, you may wonder why an experienced "bush pilot" would do something like this to such a beautiful aircraft. The first reason was *habit*

patterns. I had spent most of my flight time off airport on gravel bars or snow. Most pilots follow certain procedures for gravel bar or ski landings. My habit pattern followed me through to this accident. Rather than land, I decided to "drag the strip."

How do you think my habit patterns caused this accident? Well, the procedure I used worked very well on the ground or for skis but what about tall grass where you can't see the surface. The normal off-airport procedures didn't work for tall grass. And that brings up the second error I committed.

Judgement—or Lack Thereof

Where did judgement come into play? I hope you are saying to yourself, "I wouldn't have done that." Well, I exhibited some very poor judgement in considering landing on something I couldn't see.

Judgement is something most all of us have but tend to lose once in a while, particular when in flight. You are exhibiting poor judgement if you don't conduct a thorough preflight or load your aircraft properly. Have you ever had your aircraft loaded and were on the last flight out of moose camp but had one more 50-pound bag of moose meat to load? What did you do with it? Did you split the load and do two trips safely or toss it in and do one trip outside the operating limitations of your aircraft?

These two concepts—habit patterns and judgement—are becoming more used today in our aviation careers than ever before. Each pilot must constantly evaluate his or her habit patterns to determine if they are in accordance with the FAR and the pilot operating handbook and suitable to the type of situation in which you find yourself. For example, do you always preflight your aircraft each day in accordance with the pilot operating handbook? Do you always land your aircraft in accordance with the weight and balance data?

Fourteen years ago my habit patterns and lack of judgement cost me $12,000 in repair bills, a mortally wounded ego, and an investigation by the FAA.

Today, I am the Safety Program Manager of the FAA FSDO in Fairbanks, AK. A couple of years ago when I looked in my computer at our accident files, I found 35 accidents within our FSDO area in calendar year 1992 up to November. Fourteen of these, or 40%, occurred during hunting season. That hunting season, several accidents were caused by the unusual snowfall during moose season. These accidents were takeoff and landing accidents in deep snow and involved wheel-equipped aircraft. Were habit patterns and judgement involved in these accidents?

If you haven't had an accident and want to keep it that way, or if you have had an accident and don't want to do it again, the following ideas may help:

1. Constantly evaluate your habit patterns. Are they appropriate for your type of operation? Do your habit patterns include getting good flight reviews? Do you always operate your aircraft in accordance with the pilot operating handbook and the FAR?

2. Reevaluate your last six months of flying and try to identify areas where you exhibited poor judgement. If you are aware of circumstances where you have previously shown poor judgement, then these areas can be avoided in the future. Some of these situations may include continuing a VFR flight into IFR conditions or carrying two passengers in a *Cub* with one seat and one seatbelt.

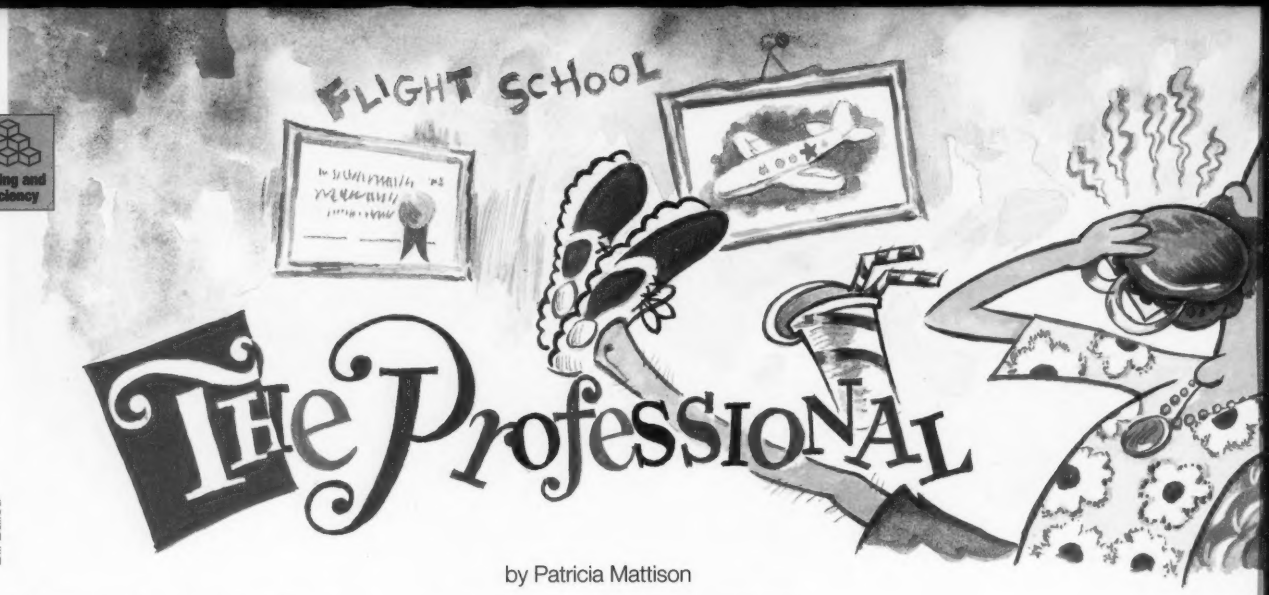
3. Get good instruction during your flight review. If your flight reviews are taking about an hour, start to finish, you may not be getting a critical training element that could save your life or that of someone else.

4. You should consider participating in the Pilot Proficiency Award Program ("Wings"). The program requires you to receive three hours of flight training and to attend one safety seminar each year. Did you know that "Wings" participants in the Fairbanks FSDO area generally aren't involved with accidents? And obtaining a phase of "Wings" can now be used in lieu of a flight review.

Remember, habit patterns, judgement, and recurrent training are three critical elements of your aviation career. You must be competent in all three. If you're not, you may get a $12,000 repair bill, a mortally wounded ego, and an investigation by the FAA. ■

"Recipe for an Accident" is a regular feature of the Alaska Region's FAA Alaskan Airmen News, *published by the region's Aviation Safety Program. Look for it to recur occasionally in* FAA Aviation News.

Training and Proficiency



The Professional

Bill Ballou

by Patricia Mattison

Ms. Mattison has taken the various annoying habits of instructors she's seen and combined them into a student pilot's worst nightmare—the uncaring instructor. Any resemblance to any flight instructor, living or dead, is purely coincidental, but if you recognize any instructors in this, show them this article. Maybe they'll clean up their act.—Editor

There you are, seated in the left-seat of a 152 waiting for your flight instructor to share his or her knowledge with you. You had arrived exactly on time for your lesson, eager for the flight. When you signed up for your first lesson you were informed by the chief pilot that before and after each flight lesson a ground session would be held by your instructor to brief you on the flight. You looked forward to that time with your flight instructor. Time for a thorough understanding of the flight ahead.

Now here you are, flight lesson number 6, sitting in an airplane wondering what your flight will entail. Your instructor, Sam, was busy on the phone when you arrived. Sam had scheduled a two-hour session with you for ground and flight. As you walked into the flight school office, you overheard Sam complaining to someone on the phone that he had not had time for his lunch and that he had another student after you. He looked at you with disinterest and said, "Go on out and pre-flight, and I'll be right out," then sent you on your way with a preemptory wave of his hand. Well, you've been waiting out here for quite a while, it's getting hot, you're wondering how much longer he'll be, and you're thinking that it would have been nice if Sam had let you know what you were going to do on this flight. Maybe, then, you could have prepared; you know, read up on the maneuvers, watched the video tapes, been a little prepared.

Sam is a kick-back sort of person. He exhibits this in everything he does. He dresses as though he were going camping or to the beach, depending on the weather. On the last lesson he asked you to excuse his bad breath, explaining that he had gone out for a few beers the night before. Sometimes you were sure he had not even gone home the night before, not even to bathe. Oh well, you've heard he's a good instructor, and sometimes a person just has to put up with life's little tribulations.

Finally, here he comes, 30 minutes into your lesson. Sauntering out from the FBO, he bears a burger in one hand and a soda in the other. "Did you pre-flight?" he asks, "Gear down and welded? Okay, what are we going to do today?"

By now your patience is wearing thin, and you feel short-changed by this instructor. "Nothing," you say to Sam, "I've decided to get another instructor. Your attitude and demeanor tell me that you are not interested in me as a student. Your lack of preparation tells me you are not a professional flight instructor. Flying is very important to me, and I want the very best instructor that I can find."

Sometimes students are hesitant to replace instructors, fearing they'll have to start all over again or fearing that they'll upset someone by making what is essentially a consumer decision. If your car were unreliable and cantankerous, you'd replace it, and you'd certainly shop around before you did. Aviation organizations such as the National Air Transport Association, based in Alexandria, VA, have done some surveying and research in this area and have found that money and time are the major reasons people drop out of flying or do not finish training for a certificate. They have also found that when students are treated as expendable commodities rather than as new initiates to the aviation fellowship by their flight instructors, it can be a serious turn-off.

Are you the professional that you want to be, or are you another Sam? The professional in any endeavor commits him- or herself to doing the best in the chosen field. The professional instructor takes pride in teaching the chosen subject, assuring that students receive lessons that are up to date, thoroughly planned, and completely instructed.

The very basis of the flight portion of the total flight lesson is the information given during the pre-flight briefing. The best instruction is given while on the

ground in a quiet classroom. Activity levels present in flight do not allow for the concentration necessary to grasp a concept. The airplane is a practice medium and should be reserved for that purpose.

Once in the air the lesson should review the previous lesson's maneuvers and then demonstrate the new maneuvers covered in the preflight briefing. It is best to have the student fly the assigned maneuver without too much correction. Constant comment from the instructor is distracting to the student and does not allow the student to learn from his or her own mistakes. Once the student has mastered a maneuver under your tutelage, have the student "teach" it to you as a review. This allows you to assure the student that he or she has mastered the assignment.

Criticism, when offered, should be positive in nature. Negative criticism closes the doors to the mind, putting barriers in place that may be hard to get through later. Repeating a maneuver that the student has trouble with should be limited to a time or two and not belabored. Come back to it another time and move on to something that will leave the student in a positive frame of mind at the end of the flight. For example, if it's obvious that the student cannot yet master shortfield landings, let the lesson end with a regular landing and review the problem and its correction with the student during post-flight. When there is a poor habit to contend with, the best place to review the problem is on the ground. The post-flight briefing is equally as important as the preflight briefing. The best time to clear up any misunderstanding regarding the previous flight is immediately following that flight, while things are fresh in the student's mind.

I was fortunate in that I had an FAA-approved FAR Part 141 school and a student flight folder to fill out at the end of each flight. During the post flight briefing I followed the maneuvers list at the top of the folder and graded the lesson accordingly. This gave me a guideline to assure the student that all of the maneuvers and tasks in each lesson were covered. The tasks were graded 1 through 5. (I told my students that 1 was God, and 5 meant "Take up golf," and anything in-between was fair game.)

Grading the lesson, immediately after the lesson, gives the student a firm idea of where he is in the flight program. At the end of the lesson the student signs the folder and so does the instructor. If a question should ever arise regarding the training of that student, the flight folder is proof positive that the required maneuvers have been accomplished.

Back to Instructor Sam. Can a leopard change his spots? Probably—or at least his clothing habits. Now, I don't say that a three-piece suit and a tie is a must for a flight instructor. After all, some of us are women, who still dress like women. Rather, dress appropriate for your location, weather, and place of business. Levi's and a nice shirt may be fine out West, while slacks and dress shirt may be appropriate in a more urban (or urbane) area. Whatever style of clothes you choose, allow it to reflect the fact that you care enough for your student to be neat and clean.

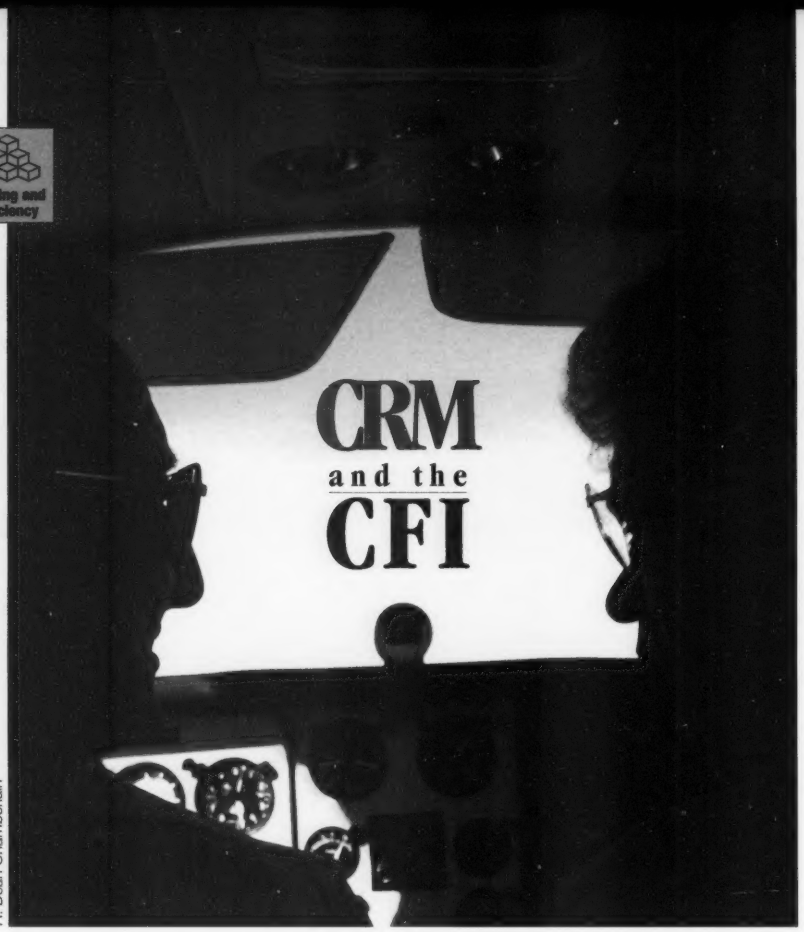
Be on time and be prepared. Your student is ready to learn, and he or she look to you as a mentor. When you give the impression that the student and the lesson are important to you, you will be respected for that—and the student will learn.

Remember the burger? Unless you plan to go to lunch with your student, sacrifice the burger-in-hand look. Forget lunch and go about the business of educating the student.

Professional instructors produce professional pilots. Whether you are a part-time or full-time instructor matters little to your student. That student deserves the best instruction a flight instructor can give. The pilot that results from a good student/instructor relationship will conduct himself or herself in a professional manner—competently and safely, just as his or her mentor taught. ■

Editor's Note: Dressing professionally, especially for women instructors, is a difficult decision at times. We want to look professional, be comfortable, and dress like a woman as well. Then, there're flights when you're trying to be the haute couture professional copilot, then the door on the Baron *opens in flight, and your skirt ends up over your head. But that's another story!*

Training and Proficiency



H. Dean Chamberlain

by Gregory G. Gorak

Cockpit Resource Management or Crew Resource Management (CRM) can be defined as the use of all resources to obtain safe and efficient flight. Many certificated flight instructors believe that CRM is a term associated only with airline or other multiple crewmember operations. But in a sense, surely, a CFI and student is a multi-crew operation. To apply the definition and make it work in the instructor/student relationship several enabling factors must be present.

Empowerment is the Key

The flight instructor must empower the student to advocate what the student thinks is the correct action until the student is convinced by the facts and not by the authority of the flight instructor. This notion runs contrary to the god-like qualities that some flight instructors have traditionally exercised or at least thought they possessed. In other words, the CFI must *empower* the student as a crewmember to question the instructor and, indeed, must inform the student that he or she will be constantly tested to determine if he or she is exercising this new power.

The Modern Instructor

Instructors today realize that the correct manipulation of controls is only a small piece of the puzzle in producing a totally safe and competent student. The instructor must orchestrate situations for the sole purpose of testing judgement. One such scenario might be to assign a primary student an altitude of 4,500 feet on a day when the ceilings are 3,500; then sit back and see what the student will do. In other words, don't constantly instruct but take the time to determine the student's ability to make decisions and exercise judgement. If the student in the above scenario attempts to climb through the overcast simply because you asked him or her to do so, then the student is not exercising judgement but is merely trying to please the instructor. This same student one day may try to please ATC when ATC has made an error in judgement.

Success Through Advocacy

The other part of empowerment is advocacy. The CFI must teach the student to advocate their position. An examiner I know, in testing judgement, will ask the applicant to do a 360-degree turn at 200 feet above the ground on final approach. This is obviously a foolhardy thing to do but is a good test of judgement. The proper action on the part of the student is to refuse the request of the examiner, which is tantamount to refusing an inappropriate request from ATC that might affect the safe operation of the aircraft. The student who refuses the above request shows the examiner that he or she is exercising proper judgement. A student who has been encouraged to practice advocacy is more likely to challenge an inappropriate request than is another student. In the 1982 Air Florida crash, the first officer practiced the art of Inquiry, but not the art of Advocacy. [Editor's note: Transcripts of cockpit voice recordings before the accident show the first officer making inquiring statements about the condition of the aircraft but not in a manner to direct attention to them.]

Day One is the Key

The instructor from the first day must teach the student to exercise judgement and must constantly test that judgement. The instructor must inform the student on day one that the instructor will be setting up judgement scenarios to test the student and must encourage and compliment the student when he or she is successful. This may sound like all work but actually is a lot of fun for both the student and the instructor.

But the result is even more important, namely in producing a safe, competent, thinking, resourceful pilot who knows the real meaning of CRM. ■

Mr. Gorak is a former Flight Instructor of the Year and now Chief Instructor for Gaits Aviation in Milwaukee, WI. He will expand upon the ideas he has briefly touched upon in future issues.

Training and Proficiency

Teaching Student Judgement

by Bill Cuccinello

As flight instructors, we have all seen many improvements in the way decisionmaking skills are taught to student pilots. Years ago it was simply teach the student basic knowledge and flying skills. With time and experience, the student would learn good decisionmaking skills. Accident investigations, however, have disproved that theory since investigations have shown an increasing number of accidents as a direct result of poor decisionmaking.

The best place to start training your student is in the "student's head" by discussing the two levels of judgement: the perceptual and the cognitive level.

Perceptual judgement means gathering and interpreting all the necessary information through our senses. A good example would be during the landing approach when our visual perception gathers enough information to tell us we have the proper airspeed, bank and pitch to accomplish a safe landing.

Cognitive judgement requires more thought and the ability to sort through the gathered information. Since most students lack the training or experience necessary to make decisions automatically, it is up to the instructor to properly outline the judgement process that leads from the perceptual level to the cognitive level. This will greatly aid the student's understanding as to why certain tasks are emphasized.

One approach might be to describe to the student the *five step cognitive judgement process*:

Vigilance—Maintaining an awareness of surrounding factors that could affect a safe flight: emergency landing sites, engine failure, or deteriorating weather.

Problem Discovery—Changes that could affect safety: oil temperature rising or oil pressure dropping, suction decrease or drop in RPM.

Problem Diagnosis—This is where you assess your student's knowledge and problem-solving skills. Set up "what if" situations during your flight. "What if the alternator quits. What would you do?" By using these techniques, the student not only learns how to analyze the situation but also realizes that in the real world of flying, things can go awry.

Alternative Generation—The fourth step in the judgement process is the "OUT." The important point here is to emphasize to the student that the alternative solution should be considered before the problem actually arises. If, for example, the student is on a cross-country VFR flight and the weather begins deteriorating, at what point will the student take action before serious problems ensue? And exactly what plan of action will the student pursue?

Risk Analysis—During this discussion, your mission is to have the student look at the alternatives and assess the amount of risk involved. If weather conditions are deteriorating, should the student continue on, set down for a short period, or just decide to postpone the trip to another day? You, the instructor, are the key element in this learning phase of teaching student judgement.

If you take the time to go over accident reports and discuss with the student factors that may have led to the accident, then have the student analyze the situation and discuss where he or she thought the flight went wrong, you have just raised your student to another learning level.

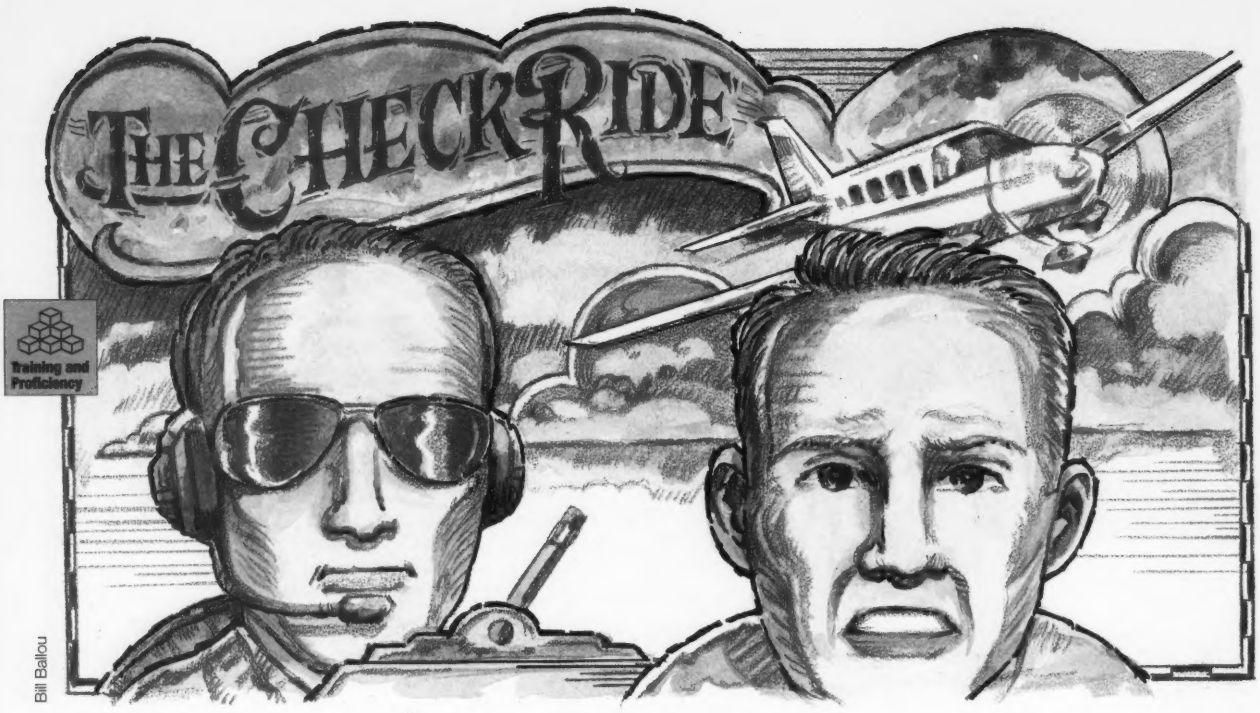
One method to teach judgement is to ask the student "why" and "how" they came to their decision after putting the students into situations, both on the ground and in the air, that required them to use their judgement. Praise them when appropriate and turn decisionmaking possibilities over to them as soon as possible. Let the student make a few mistakes (as long as it does not compromise safety) to learn from them.

Whenever possible, use graphic [pictorial] descriptions or analysis. One of the better flight schools I have seen uses graphic representations to get the importance of weight and balance across to their students. All aircraft owned by the school are programmed into a computer. After the student performs the weight and balance personally, the student then accompanies the instructor or Chief Pilot to the computer. The particular airplane is called upon the screen and several "what if's" are put into the computer to show what happens graphically, if passengers of different weights are put on board. The computer shows graphically when the aircraft is out of the envelope. The student now gets a better picture of the CG changes or elements that pertain to safe flight. This is an excellent, dramatic way to teach since few students leave that school without a clear understanding of weight and balance.

But remember: You, the instructor, must set the example since the student will emulate your flying habits. It is imperative that you establish good, safe flying routines from the start: Preflight, clearing turns, vigilance for other aircraft, proper communications, and, of course, courtesy to other pilots, ATC, or anybody connected with our flying community. By demonstrating good perceptual and cognitive judgement, you enforce to your student that flying can be safe and fun, but only if done properly.

You know, it is a great feeling to fly with a pilot you taught years ago and have that pilot turn to you and say, "I've been flying for years and thanks to you, I really enjoy it because you're the one that first emphasized safety and good judgement to me." ■

Bill Cuccinello is a CFII, an Aviation Safety Counselor, and the editor of The Boston FSDO Communicator, *where this article originally appeared.*



by Bill Belanger

This is the true story of a check ride that ended in the issuance of a "pink slip." The names of the navigation fixes and airport have been changed, but otherwise this story reflects events as they actually happened.—Author

Bill considered himself a pretty competent pilot. He had about 150 hours total flight time when he took his practical test for his instrument rating. He had been endorsed for the check ride by an instrument flight instructor, who had many years of corporate flying. He had been taught by a number of instructors—none of whom had any doubts about his instrument flight skills. But he did not pass the check ride. Let's look at the events that led up to this check ride and then at the ride itself. It might provide some valuable lessons for other pilots who want to add a rating or two.

Bill's decision to get the instrument rating grew out of a number of business flights which had to be canceled because of the weather. He worked for an employer who was willing to pay for private airplane rental on company business. This had been a good way to build hours, but it was entirely too undependable due to the weather in the Northeast. Then some personal spending money became available. So Bill presented himself at the local FBO and said the magic words: "Can you give me an instrument rating? I have money."

At the time, 1987, the FBO was not a FAR Part 141 Flight School, so the instruction was given under Part 61. (The difference is explained later.) Bill bought the FAA Instrument Flight Manual, all the suggested texts and a few others, read furiously, and passed the written on his own. Then he began the flight training. For the first five hours the instructor used a mix of an airplane and a ground training device. Then the training was interrupted because the instructor found a job with a commuter airline. There was a delay of several weeks until another instrument instructor could be hired by the FBO. The new instructor gave him another three hours, and then he also left for a corporate job. A third instrument instructor added a few more hours, and then found another job, leaving the FBO without an instrument instructor yet again. With a grand total of 15 instrument hours given over four months by three instructors, Bill's level of frustration reached oxygen altitudes.

Bill did a careful review of the Part 61 regulations and found that he could accomplish 20 hours of the instrument training in a ground trainer. By this time, Christmas was approaching. He contacted a local community college with an aviation curriculum and was able to arrange for instructions in their trainer while the students were on vacation. It had already taken four months to get 15 hours of instruction, so he decided to do what he could in the time available. This meant taking 18 hours of ground trainer instruction in three days. (This was exhausting, but also burned in some permanent neural patterns for instrument flight.) At the end of this marathon, the instructor pronounced him fit to fly on instruments, save for the completion of a required crosscountry and a few more hours in an airplane.

Back at the FBO, there was still no instrument instructor on staff, so the re-

quired crosscountry was accomplished with a flight instructor who did not have instrument instruction privileges. This is legal since only 15 hours of instruction needed to be given by an instrument instructor, but this instructor could not endorse Bill for the check ride. Bill then prevailed on a senior pilot with extraordinary experience to ride with him. This person was unable to give him more than an hour of instruction because of his very busy schedule. Bill finally scheduled the final few hours of the required instrument flight time with a corporate pilot who was also an instrument instructor. This completed the required 40 hours of instrument flight and also resulted in an endorsement for the check ride. At this point Bill had a grand total of 41 instrument hours under seven different instructors.

Bill's check ride began with the filing of a flight plan westbound from the Philadelphia suburbs to Pittsburgh. The flight was to begin at Bill's home base, an uncontrolled field with no clearance delivery frequency available. This meant Bill would have to get his IFR clearance by telephone and then meet a ten minute "time off" from the time he got his clearance. He had done this before during his training and it was not a problem. It just meant setting up everything possible in the airplane before calling for the clearance. He filed direct LXX VOR (to the west) and then along the airways—an uncomplicated flight plan.

After filing, he went out to preflight the airplane. He carefully set up the radios for the appropriate NAV and COM frequencies so that there would be a minimum of knob twisting during those critical ten minutes before takeoff. He then went back in and contacted Philadelphia Clearance Delivery by telephone for his clearance. The clearance came back "Cleared to PIT via MXX, Victor000 to LXX, then as filed." This threw a twist into Bill's plans because MXX was to the east, not in the direction of the flight. The clearance not only didn't match the flight plan as filed, it required Bill to fly east in order to go west. Bill had not encountered this situation before, but decided to make the best of it.

Clearance in hand, Bill and the examiner headed for the airplane. At this point, Bill decided to omit the use of his usual earplugs so he would be able to hear better (he thought). He ran through the checklist uneventfully, and was off the ground within the allowed ten minutes. At the 1,500 feet radio contact altitude, he called Philadelphia Approach, and found he couldn't hear very well. The background noise was making the radio speaker difficult to hear. Well, so much for leaving out the earplugs—the inability to hear well was very distracting.

The next interruption was from the examiner. "Where are you going?" Bill had turned in the direction of MXX (he knew the heading), but had not yet turned the NAV radio to the proper frequency. It was still turned for LXX (and the OBS needle was centered). He was flying without any position information. As the radio knobs were being furiously twisted, Bill blew right through the 2,000 foot altitude assignment. At 2,300 feet, the examiner stopped him because the IFR plan was in his name, not Bill's, and he preferred to keep his ticket a while longer.

At this point, Bill was mentally numb. He thought surely he had already failed the ride, but the examiner pressed on. Canceling the IFR plan, he did a couple holds, a VOR approach and an NDB approach. All were satisfactory except the NDB approach. In spite of having previously done many NDB approaches, for some reason this time Bill put the ADF indicator on the tail of the airplane and neglected to cross check the Directional Gyro. In other words, the altitude was fine, but the geography was all wrong. The examiner was feeling charitable that day. He filled out the pink slip, but only required Bill to fly an NDB approach on the retest. Another lesson with the instructor who had endorsed him didn't reveal any problems. On his second try Bill passed the check ride, but nobody really understood why his performance was so poor on the first, least of all Bill. The instructor's diagnosis was "check-ride-itis," a common malady that crops up only during check rides and is highly debilitating. It is similar to "white coat-itis" that strikes when you renew your medical.

In retrospect, one part of the real problem was in Bill's decision to do something different on his check ride than when he flew with his instructors. Just the simple act of leaving out the earplugs resulted in a serious distraction. Now, we are all supposed to be able to fly with distractions, but in the middle of a check ride is no place to find new ones that the examiner didn't put there himself. These distractions, coupled with the emotional load of a check ride, can quickly compound themselves into an unmanageable mental load. Even tasks that are usually no problem can become impossible under stress. The mind becomes numb to everything but the distraction and performance suffers. The important point here is not to do anything in a check ride that you haven't done with your instructor. The results might be unpredictable. The same might be said for your flying after the check ride.

Adding to the stress of the extra noise was the sudden change in plans. Bill could have easily coped with this in a less pressured situation, but with the stress of a check ride and the distraction of the noise, things didn't work that way. The need to change NAV frequencies was not recognized soon enough to fit the examiner's preferences. Bill was clearly behind the airplane at this point, and this added more to his stress. Then when he blew through the assigned altitude the stress reached unmanageable levels. Flying the airplane was now a secondary matter. Bill's attention was on the stress and there wasn't room for anything else. Only remembering the admonition to "fly the airplane first" allowed him to fly most of the remaining maneuvers acceptably. While this chain of events happened during a check ride, there is nothing that prevents similar stress to build up at other times. Heavy emotional or psychological stress is equally debilitating whether or not an examiner is in the right seat. If you know you are stressed out when you are still on the ground, don't take off. If an airborne emergency creates the stress, then remember to fly the airplane. If you do

this, the stress is likely to take care of itself. Finally, do you know your own unique reactions to stress? It might be a good idea to find out.

But there is another underlying cause for Bill's problem. In the months after the check ride, Bill made many flights under IFR plans. Most were uneventful, but occasionally a controller would do or say something that Bill didn't completely understand the reason for. Bill still had a problem, but had passed the check ride. There was nothing in "the system" that would force the problem to be corrected. In spite of all the reading and training, Bill did not really know the ATC system very well. He did not know why the clearance might be different from the flight plan the FSS had accepted without question. He did not understand the complexities of ATC near the Class B airspace and what to expect from ATC, or exactly how to file a plan that would be accepted as filed by ATC. It was simply not described in the book he had read and was never explained by any of his instructors.

The problem with Bill's understanding of ATC was finally remedied at a safety seminar in the "Wings" program. Some nice folks from Philadelphia Approach were there to explain the complexities of ATC in the local area. Now Bill finally learned why he had been cleared via MXX. Philadelphia "owned" that airspace and wanted to have radar contact established before handing Bill off to the Center. This meant flying east toward MXX until radar contract was established, then Philadelphia would issue an amended clearance westbound with only a minor detour. All Bill's questions about IFR plans, clearances, and routings were eventually answered at this and other "Wings" seminars (Much to the credit of the program.)

So what's the problem here? Why did Bill fail a check ride when several instructors thought he surely would pass? Why was he still occasionally uneasy with ATC even after passing the practical test and presumably competent? It's not really very obvious, but it goes back to the fact that there were seven instructors involved in one instrument rating. There was really nobody keeping a broad perspective on Bill's training and evaluating his ability to fly IFR in the congested airspace near Philadelphia. Nobody was minding the store. The practical test standards make it clear that the flight instructor's responsibility is to train the student to acceptable standards in all knowledge areas, procedures, and maneuvers in the practical test standard. In Bill's case there was no single instructor who had seen all aspects of his performance. Bill could fly holds and approaches with no problem and could handle ATC communications. He just didn't have the overall understanding of the complex ATC procedures near the Class B airspace. It had fallen through the cracks and nobody had noticed.

Flight instruction only works well if there is a continuing partnership between the instructor and the student.

Is there a major problem with the training system that allowed this to happen? Probably not. Bill had some discomfort with some of the complexities of the ATC system in the crowded Philadelphia area. But the same thing would have been true for an instrument-rated pilot who got his rating in the Midwest and then moved to the Northeast. The basic skills were all there. Bill wasn't going to spiral out of a cloud or fly into a mountain. His skills just hadn't been integrated into a unified whole that included the peculiarities of the local air traffic system. No instructor who saw only part of his training could possibly pick this up. Was it dangerous? Probably not. Was it the best way to be trained? Definitely not!

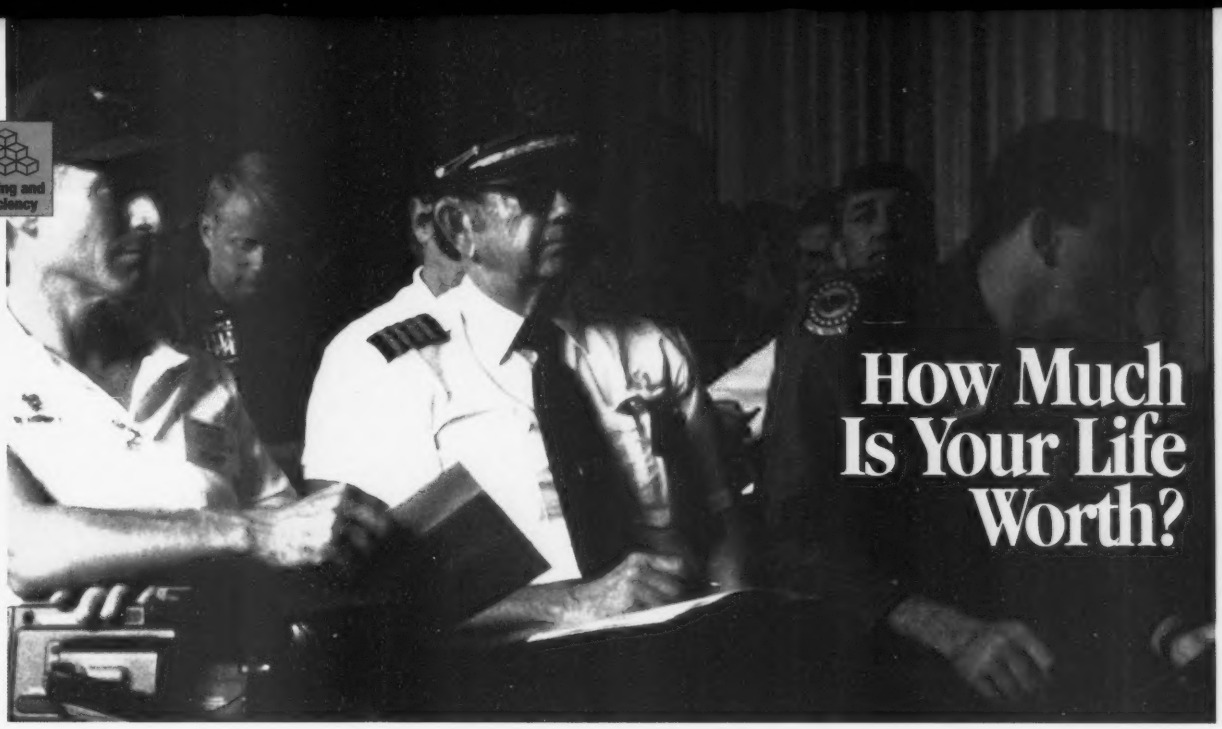
Only a carefully designed course of instruction can teach a subject as complex as flying an airplane. In choosing a training program, the student is faced with a number of options. Not only must he or she choose a flight school and an instructor, the student must also choose whether to be trained under FAR Part 61 or 141. Part 141 flight schools have some advantages if one is available. This is because there is a rigid study plan approved by the FAA which must be followed. Records of training must be kept and each lesson must be graded. There are stage checks by the chief flight instructor to be sure things are going well. This keeps the continuity from lesson to lesson and allows an easy transition if there needs to be a change in instructor. The difference between Part 141 and Part 61 is more than a simple matter of recordkeeping. Because of its greater efficiency, Part 141 allows the student to attain a rating with fewer flight hours. Only a portion of instruction received under Part 61 can be credited toward a Part 141 course.

On the other hand, Part 61 instruction is more readily available. If a Part 141 flight school isn't an option or isn't desired by the student, then he or she should carefully choose an instructor who is willing and able to commit to completion of the course of study under Part 61. The student should do some research before choosing a flight school or an instructor to be sure their goals and limitations are compatible. Will the instructor be available when the student is? What is the instructor's personal agenda—will he or she move on in a few months? Are your personalities compatible—it's not easy to learn from someone with whom you are not comfortable.

The student should not expect to get a rating by taking an hour of instruction here and there. The system just doesn't work well that way. Flight instruction only works well if there is a continuing partnership between the instructor and the student. Whether in a Part 61 or a Part 141 flight school, the student should expect the flight instructor (or flight school) to follow his or her progress carefully and assure that all phases of the flight training are mastered. Otherwise the student isn't getting a big (and potentially life-saving) part of what the student is paying for!

By the way, you might have figured out by now how I know so much about Bill. It's because he is me. ■

Mr. Belanger is a flight instructor and ground instructor in Media, PA.



Training and Proficiency

How Much Is Your Life Worth?

by Paul H. David

How much is your good health or your life worth? How much is the life of a family member worth? Can you even put a price on your life or the life of a loved one? Our well-being and that of our family and friends is far too precious to be needlessly risked yet that is precisely what many general aviation pilots do when they go flying without being fully proficient.

It seems really stupid when you consider that airline pilots, corporate pilots, CFI's, pilot examiners, and, yes, even FAA inspectors, all attend refresher training courses on a regular basis. It is indeed strange that these people I have just named, who fly hundreds of hours a year, find it necessary to continually update their training by attending seminars and classes, and spending still hundreds more hours in approved simulators. The fact that the average general aviation pilot, who flies less than 75 hours per year, usually does not seek any refresher training outside of the minimum for a biennial flight review, is simply spine tingling. This is probably why general aviation has a higher accident rate when compared to other fields of aviation, especially accidents which occur as a result of VFR pilots flying into IFR weather.

The FAR require a pilot to make three takeoffs and three landings every 90 days in the same category and class of aircraft in order to carry passengers. However, a person who meets only this currency requirement may not be PROFICIENT. Also I have found from biennial flight reviews that if a pilot is flying this infrequently, the pilot might be spending even less time in the books, which could mean that he or she may not have the knowledge to fly in our National Airspace System safely.

Why don't more general aviation pilots get the needed refresher training? I believe for the most part it all boils down to money. Now, I know that aviation is a costly affair. The price of owning and operating or renting an aircraft is anything but cheap. Add to that the cost of a good flight or ground instructor, and it can result in quite a large chunk of change. But we must remember that the cost of refresher training may be a small price to pay when the alternative is an aircraft accident resulting in loss of life or property damage. I once reminded an FAA inspector how expensive it was to train for proficiency. His answer was, "If you think training is expensive, try paying for an accident." Much as I hated to admit it, he was exactly right.

What can we do to be more proficient? Check your local FSDO for scheduled FAA "Wings" (Pilot Proficiency Award Program) seminars and events. These are an excellent way to gain refresher training at minimal cost. Also see your local Aviation Safety Counselor for scheduling of safety seminars, which are generally free to all pilots, and flight training, which in many cases may be discounted for refresher purposes.

By the way, don't forget to get current copies of the FAR and the *Aeronautical Information Manual*(AIM). These publications are obtained cheaply and you should keep yourself updated on rules and procedures. Your local flight and ground instructors will be happy to give you any assistance needed.

If you fly fewer than 100 hours a year, consider taking a two-hour refresher program with a good instructor every three months—a small price to pay for your good health or your life.

HAPPY FLYING! ■

a feature by Thomas N. Jones

The first portion of this article is a fairly graphic description of an accident. Some may find it disturbing, but the pilot's stream of consciousness as he knows he is going to crash contains some very thought-provoking points about making the time to train to proficiency.—*Editor*

The runway is flashing past us! I can't get the airplane back on the ground! The runway is only 3,000 feet long, I've used up more than two-thirds of it, and the end of the runway is coming toward us in excess of 10 feet per second! Only 100 seconds to live! Go around! That's it! Go around!

Full throttle! Full power! The engine screams, doing all it can. The propeller is whirling rapidly against the stops. I'm doing all I can. Don't stall; don't lift off too soon—have to, the trees are getting larger and larger by the millisecond.

Time has stopped, suspended in our minds. What was a blur of action is now a film in slow motion. The trees aren't coming toward us as quickly now. It is easy to see each leaf, some just turning red and gold with the change of seasons. Each branch is easily identifiable, as well. There, one is not growing straight like the rest, it has a knot on it as big as a softball. The grain of the wood is easily discernible. Rough grooves in the bark stand out with clarity.

The propeller has nearly stopped; I can count the revolutions easily. Actually, it is spinning at more than 2700 revolutions per minute or 45 revolutions per second. The red and white stripes near the tips of the propeller stand out with clarity.

I am going to hit the trees—I know it; it is certain. I will do all I can to avoid them, but it seems my death is unavoidable.

How did I get into this predicament? Why did it all go wrong so quickly? I'm a good pilot! After all, I have practiced

as much as the FAR say I must. I have made three takeoffs and landings within the past 90 days. I was sure to complete my biennial flight review 20 months ago. My airplane is new, powerful, and well-equipped. What am I doing here about to die?

The runway continues to slip by in "slo-mo," like a dream sequence in a movie (My life flashing before my eyes?), and I have time to reminisce. What could I have done differently? When I was planning to go on this trip, the flight instructor at the local FBO offered to go over short field landings with me. I just didn't have time. Besides, she charges $30 an hour. She is younger than me and doesn't have as much total time as I do. She probably didn't have anything to teach me.

Or did she?

On my way to touchdown, I had noticed the runway sloped away from me. I have never landed at an airport in the mountains before. Could I have obtained any information about this airport before I began my approach or before I began my flight? Ah, that's right, the Airport/Facility Directory. *It shows that this runway has a down-slope in the direction we are landing. When was that safety program dealing with mountain flying conducted? Was it only two months ago; I didn't have time to go. There was a special on television about the bed and breakfast inns we planned to visit on this trip. Was anything of value presented at that seminar?*

Looking down at the tachometer and the manifold pressure gauge, it shows that I am not developing as much power as I normally do at sea level. Why not? Oh, that's right! The engine doesn't develop as much power at altitude as it does at lower elevations. I didn't take the time to compute the maximum performance procedures for this altitude. I just didn't have time! We were late checking out of the hotel, and everyone was rushing me, telling me about how we "really need to get cracking." Now, we really are going to crack.

We lift off the runway, right at the end. The airplane is staggering toward the trees. Don't stall! I can't get it to climb. The trees, the trees! Why won't it climb? Just a few feet and we can clear the trees.

There, the wing just hit the tree. See the aluminum peel off; the spar is breaking near the wing tip. The noise reminds me of the sounds I heard once at an automotive wrecking plant when they crunched a car four feet tall and 20 feet long into a cube three feet square. Wrenching, tearing, breaking tree limbs go over the fuselage in slow motion.

Now we are cartwheeling in the air. Purses careen about the cabin. Cameras bounce off the ceiling, our heads, the seats, the instrument panel. Coats fly around, obscuring vision at times, wrapping around seats, seatbelts. Our bodies thrash around, jerking at the seatbelts, the shoulder harnesses, and bang into the sides of the fuselage. Our heads whip from side to side. Will our necks break?

Why didn't I make it over the trees? Look at the green lights showing the landing gear still down. The flap indicator shows full flap extension. Why did I forget that? How could I forget that? I haven't practiced go-arounds for a long time. Why didn't I? I just don't have time for practice. Besides, I passed all the tests required for my private pilot's license. Shouldn't I know how to perform a short-field landing? The engine did its best to get us over the trees, but I didn't do enough to help it.

The ground appears to be coming up slowly. What kind of ground is that? Red clay with large cracks, like some barren, alien landscape from science fiction. The propeller chews into the muddy surface. Throwing water and mud all around, it digs a hole into the unearthly stuff under us. Will we just be swallowed up in mud, going down beneath the surface to drown, never to be seen again?

The fuselage flips over, breaking into several pieces; yet, the cockpit miraculously remains in one piece. Everything stops. All is quiet except the fuselage creaks as it contracts from the impact. The engine is finally finished its howling. Now nothing moves; there is not even the sound of an insect. The birds are not calling. The wind doesn't move the bushes in this hell.

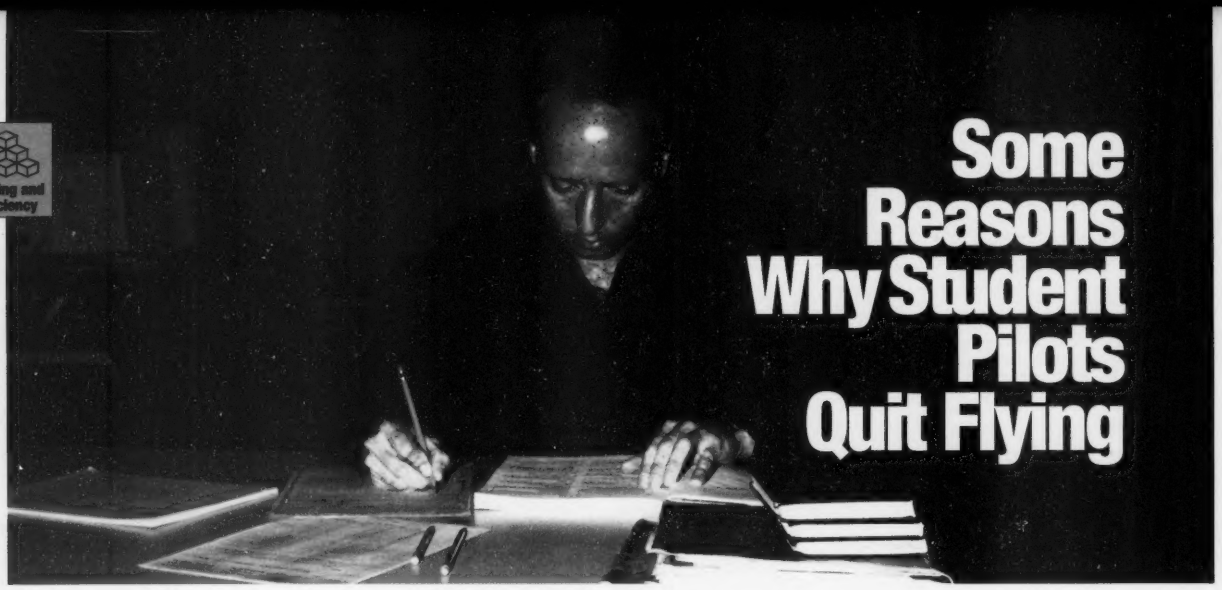
We unbuckle, slowly crawl from our battered seats and look around, listening. No one says anything. We look finally, hesitantly at each other with blank stares, no look of wonder, no fear—nothing—just blank stares. Are we dead? I have heard about out-of-body experiences, but where are the bodies? Where is the light we're supposed to see? Does this mean. . . ? We are ALIVE! WE ARE ALIVE!!!

An airplane flies overhead. It doesn't see us and our plight. Where is the airport? Nothing indicates which direction we should travel to get help, to dress our wounds, stop the bleeding, mend the broken bones. In all the confusion, the flipping around, we cannot tell which direction to go.

The hand-held radio! Find it in the jumble of trash that only a few minutes ago was a $200,000 aircraft. Pick it out of the pile of muddy clothes, broken cameras, and soggy navigation charts and travel brochures. Call in the blind, HELP! HELP! HELP! Oh, that's right, MAYDAY! MAYDAY! MAYDAY! Can anybody hear us? Somebody, anybody, please help!

This is a dramatization of an actual accident. In our discussion after the event, the pilot indicated that this was the first time he had attempted a landing at an airport in the mountains. He had not consulted the *Airport/Facility Directory* (A/FD), so he didn't know about the down-slope until too late. Improper procedures, excessive speed, a delayed go-around, and improper go-around procedures all contributed to this disaster.

Continued on page 24.



Training and Proficiency

Some Reasons Why Student Pilots Quit Flying

by Paul Arnason with Dean Chamberlain

Editor's Note: Last year, Mr. Paul Arnason, who has since graduated from Russell Sage College in Troy, NY, worked as a summer intern in the Aviation Safety Program Branch here at FAA Headquarters. As part of his internship program, Mr. Arnason was required to develop and complete a research project of mutual interest to both his academic advisor and the FAA. This article is a brief review of his project. It may provide flight instructors, FBO's, and student pilots some insight into why some students stop flying. The report may also provide some ideas on how to get those students back.

As part of my internship program, I had to design and complete a research project. As a student pilot with 15 hours of flight time, I wanted to do a project that would be useful to the aviation community as well as meet my school requirement. My original idea was to look at the decreasing number of new pilot starts. That subject has been a hot topic in general aviation for years. But, it was pointed out to me by my FAA project coordinator that while I had the motivation to do such a project, I lacked the expertise and time needed to under take such a huge project. A project that industry and government have not been able to solve in years. Narrowing my scope, I chose a project that I had some personal knowledge of and that met my course requirements: To investigate why some student pilots start training and then quit.

A review of the available aviation statistics show there has been a general decline in the number of student pilot starts over the last decade or so. According to Statistics Table #17 in the calendar year 1993 book of "U.S Civil Airmen Statistics" (published by FAA's Office of Aviation Policy, Plans, and Management Analysis), there is a gap averaging 42,298 a year between the number of student pilot starts and private pilot certificates issued for the years 1984 to 1993. My project was to develop ideas on how to reduce that gap. If we can understand why some students start and then quit, we can find ways to encourage them to complete their training.

The Gap

In talking with people, several ideas were given for the apparent decline in new pilot starts. Ideas ranged from the loss of GI veteran flight training benefits after the Vietnam War to the proliferation of video games and computers to a general lack of interest in personal flying.

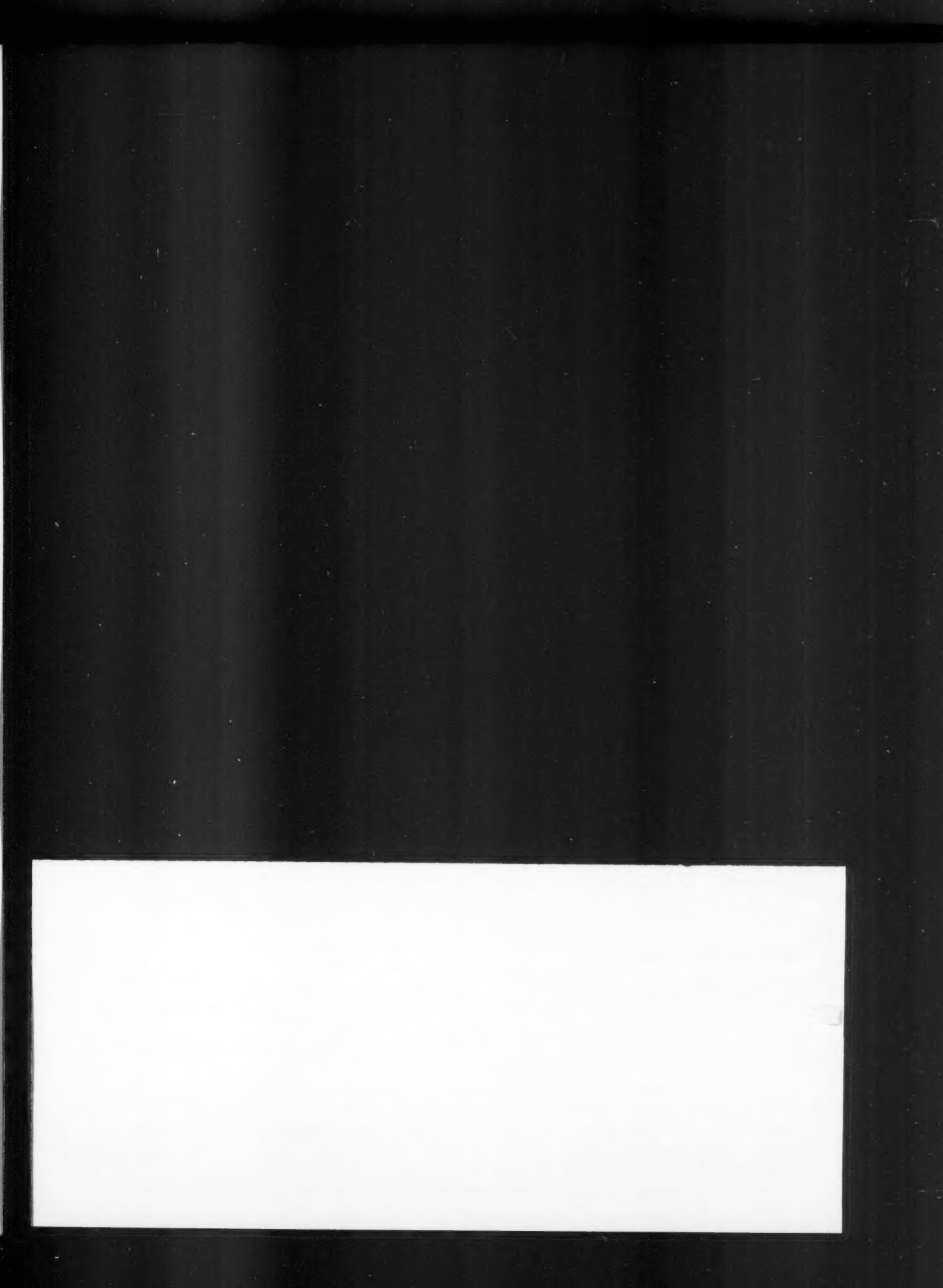
In reviewing the published data on pilots, one thing Table #17 does not show is how long it takes for pilots to get certified. Since pilots learn at their own pace, some students may have gotten their third-class medical/student certificate in 1990 for example, but did not get their private pilot's certificate until 1991 or 1992 or later. In cases of more than a two-year delay, the data might show an apparent wider gap between student starts and certificates issued then actually exists.

The reason is since most pilot certificates have no expiration date, FAA has two broad categories for tracking certificated pilots. Those with a current medical and those without. The FAA's key is a current medical.

Since student pilot/medical certificates have an expiration date, they drop from the system after that date. This might be one explanation for part of the gap between student starts and new private certificates issued. A student may start, quit, start again and then complete his or her training several years after first starting. This is a successful student training start even though there is extra time involved.

The Student

This article is about the other type of student pilot. The one who starts and never finishes. I conducted an informal survey of training professionals and a few students to try to find out why they think some student pilots start and then stop training. This article is the results of my survey with some recommendations based upon the survey. As I see the situation, first we must certificate the flight students who start training, then we must recruit more stu-



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dents to stop the general decline in new pilot starts. As those in sales and recruiting have found, the best sales people or recruiters are those who have just bought the item or joined the team. The best recruiter in aviation is a new pilot.

Survey Technique, Methodology and Design

The informal survey was designed to be representative of all geographical regions in the country. The survey included student pilots, certified flight instructors (CFI's), flight schools, aviation colleges, FAA aviation safety inspectors, airline transport pilots (ATP's), and various industry groups.

The interviews, both personal and telephone, took place between June and July 1994. The reasons why I selected these particular individuals and groups were their expertise in both the certification process and knowledge of pilot training.

I interviewed 18 people involved in the airman certification process both within the FAA and industry. Some of those people I interviewed included the chief flight instructor of Kent State University's Flight Training Program in Ohio, Mr. Grossman, and a friend of mine, Dr. Virginia Ryan. Dr. Ryan is a former student pilot who stopped her flight training. The industry groups included the Aircraft Owners and Pilots Association (AOPA), the Experimental Aircraft Association (EAA), and the National Association of Flight Instructors (NAFI).

Some of the FAA people I interviewed worked in the FAA's General Aviation and Commercial Division's Airmen Certification Branch and its Operations Branch in the Washington Headquarters.

The Airmen's Certification Branch is responsible for developing the certification policies for pilots and related airmen. That person was Mrs. Judy Ashby-Adams. She is a General Aviation (GA) Operations Aviation Safety Inspector (ASI). Mrs. Ashby-Adams is an ATP-ASMEL, CFIAI-S&ME, and commercial ASES. She has more than 7,000 hours of flight time.

The Operations Branch inspector I interviewed was Mr. Stephen Isaacs.

He is a GA operations inspector with ATP-ASMEL, COMM ASMES, and CFIAI-S&ME ratings. He has more than 3,100 hours of flight time.

In talking with Mrs. Ashby-Adams and Mr. Isaacs, they said in their experience as both flight instructors and FAA Aviation Safety Inspectors they thought the primary reasons students quit flying were cost, scheduling, conflicts with flight instructors, and motivation.

Mr. Grossman said that money was the main reason he thought students stopped training. He also mentioned lack of excitement and the amount of work required. He said some students did not find flying as exciting as they thought it appeared to be, and they were not prepared for the amount of work it takes to get a private pilot's certificate.

Dr. Ryan said she stopped training because she lost the support she needed to keep flying. She had several friends who were flying when she was flying, and when they stopped, she stopped. Her friends provided the support she needed. However, when they left, she no longer wanted to keep flying. Now, she said it would be too expensive for her to start over again to regain her original proficiency.

Survey Results

When the survey results were tabulated, the number one issue across the country was the high cost of flight instruction. Other common themes that kept occurring are (in no special order of significance) how well was the student pilot motivated throughout his or her flight training; a negative impression of either the CFI or the Fixed Base Operator (FBO) by the student; the stress of flight training; the type of relationship the student pilot had with his or her CFI; scheduling problems that the student pilot had with home, work, or other outside activities; how much commitment or desire did the student have to finish his or her flight training; what level of fear of flying did the student pilot have or what type of attitude towards flying did the student bring to training and how well did the CFI recognize and address these issues; and the lifestyle of the student pilot.

Lessons Learned and Recommendations

The first issue is the cost of flight training since that was the most common concern for most student pilots. Although there is enough debate as to whether or not learning to fly in the 1990's is proportionally any more expensive than it was in the 1960's or 1970's, the question of cost was addressed by both the general aviation industry and the FAA in 1989 when the FAA introduced a new pilot category called the Recreational Pilot Certificate. This new certificate was an attempt by both the industry and the FAA to

reduce the cost of flight training while not sacrificing safety, which is the FAA's number one priority.

Recreational Pilots: A recreational pilot certificate can save a student pilot money by reducing the number of training hours required for obtaining the entry-level pilot certificate. The minimum number of hours to become a certificated recreational pilot is 30 compared to 40 hours for a private pilot certificate under FAR Part 61. Although designed to spur flight training, the recreational pilot certificate apparently is not very popular. According to one FAA report, only 641 Recreational Pilot certificates were issued between 1990 and 1993. Because of the limited number of recreational pilot certificates issued, I did not included that category in my research.

FAR Part 141 Schools: Another cost reduction recommendation is for a student to go to an FAA-approved FAR Part 141 flight school. FAR Part 141 schools are authorized to train pilots in less time than a pilot trained under FAR Part 61. The reason is FAR Part 141 schools must use an FAA-approved training program, which include instructor standardization and written as well as flight testing during each phase of the student's training..

Other Money Saving Ideas: Another way someone can save money learning to fly is by training more frequently over a shorter time period. By reducing the training period to a few weeks or months, a student does not have to spend money "retraining or relearning" lessons already learned but forgotten because of breaks in training. By compressing the training period, students retain more of their training for longer periods of time.

Students must be cautioned though that over-training can also reduce learning. Balancing the two extremes between too much training and not enough training is the key to successful flight training in the minimum amount of time.

College Aviation Programs: Another flight training option is for a student to go to a two-year or four-year college that has an aviation program. These schools offer both general education classes and specialized aviation programs. For further reading on this subject see the article "How to Select an Aviation College" in the April 1994 edition of *Flight Training* magazine.

Block Time and Prepayment: If college doesn't appeal to you, another recommendation to reduce the cost of flight instruction is to buy flight training in five- or 10-hour blocks of time or by prepaying for the course. Prepaying for flight training instead of by the hour or by blocks of time may entitle a student to a discount. As is the case in all financial transactions, you should only prepay for a course with a reputable school and only with a written contract with all of the terms and conditions spelled out. For example, you need to know what happens to your money if you fail to complete the course for any reason. Like all major transactions, you should shop around for the best rates both for your training course and any financing you might use. When borrowing money to fly, you must add in the finance costs to the flying costs to see if you are really saving money by prepaying.

Flying Clubs: Another money saving option is to join a flying club. By spreading club costs over its membership, most flying clubs offer cheaper flying and instructor rates than might be available at your local airport. The June 1994 *Flight Training* magazine article "A New Pilot's Guide to Flying Clubs" goes into great detail about what to look for when joining a flying club. The author covers costs, maintenance, ownership of aircraft, insurance, scheduling, instructors, and training.

Motivation

Motivation (or the apparent lack of motivation) seems to be another reason why so many students don't finish their flight training. There could be several reasons for the lack of motivation. The student and CFI may not be compatible with each other. The student may not be receiving the emotional support he or she needs, or the student may feel like he or she is the only one who has ever had a bad training day. Obviously, there may be other reasons involved. The fact is, everyone has had training problems and a drop in motivation at one time or another. The question is how to survive these problems and rebuild the motivation. Here are some ideas on how to survive these types of problems.

One recommendation is to have a mentor for the student pilot. This person would not replace the CFI, but he or she would be an emotional support for the student pilot. The mentor could help the student during those stressful times when needed by the student. This is one of the ideas behind AOPA's mentor program.

Another recommendation is students might want to establish a study group with other student pilots. Not only could the group provide motivation, it could help members learn from each others mistakes and successes.

Finally, although student's need to be self-motivated, their CFI's also have a responsibility to keep their students motivated. After all, the CFI is the professional being paid by the students to teach them how to fly.

Motivation and Learning Techniques

The April 1994 edition of *Flight Training* gave recommendations on how to motivate students in the article "Student Stress—Human Factors in aviation education" by Robert Haefner & Amelia Cote. Their recommendations are realistic such as asking students why they want to fly. They suggest students make a check list of the reasons and sacrifices they will make to learn to fly. They also tell students that flying is expensive, so they should try to make all of the financial arrangements as early as they can.

They also tackle the CFI issue. They say finding the right flight instructor is the key in a student's flight training and finding one that you are comfortable with is very, very important. They state that if you don't like the one you have, you can always change to another one because there is nothing worse than being uncomfortable with your instructor.

Next you should be prepared for each lesson and this can be done with several learning devices such as read-

ing your flight manuals, other aviation related materials, watching instructional videos, and visualizing the flight maneuvers. You can do any one of the methods previously described or a combination but do what ever it takes that works for you. And the more you concentrate on the ground the more you would save during your flight time and that would result in significant savings over many, many lessons

Other recommendations are to take observational rides if possible. This way you can learn from other students mistakes and you can see things in a different way since you won't be at the controls. Also you should tell your instructor what is going on. Don't let him or her do all the talking. Not only is this a great way to help you understand the material but it is a very good confidence builder if you can explain each maneuver or subject and this will reduce stress as well.

Summary

All of the survey information seems to boil down to this, students who want to learn to fly will learn. Students who do not want to learn to fly, won't. In the gray area in between are the students who might need extra help. These are the students who want to learn to fly, but who may not be quite prepared to fly. They need all of the encouragement and support the aviation community can provide.

Learning to fly is relatively easy, relatively inexpensive, and a lot of fun. If you are not a pilot, you should call your local flight school today and ask how you can start learning to fly. If you are a pilot, you should recruit a student and help him or her find a flight school. If you are member of one of the aviation groups promoting student training, support your group's program. As this article states, yes, there can be problems in learning to fly, but these problems are not insurmountable. Learning to fly just takes a little work, dedication, and motivation. ■

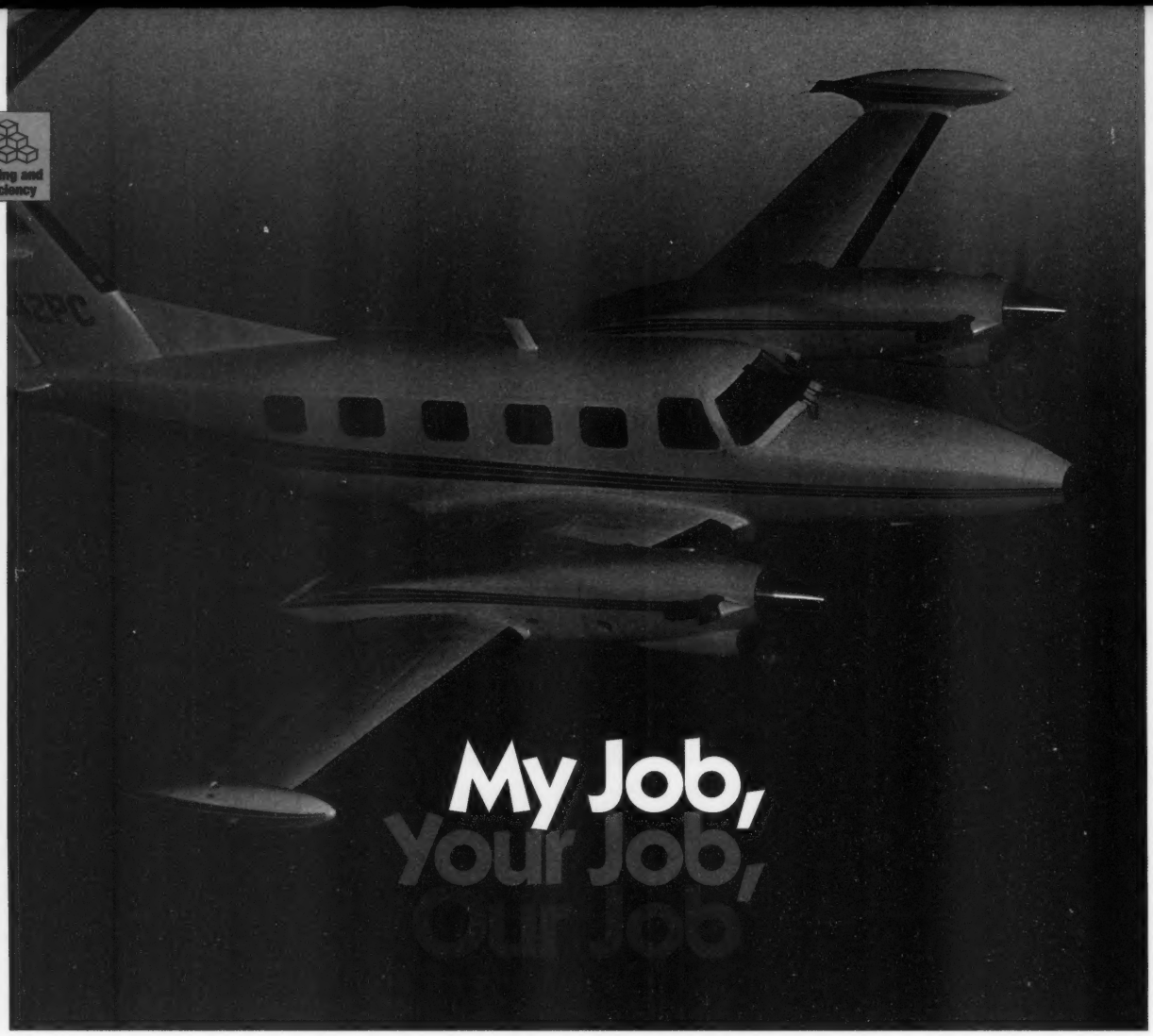
Original Airmen Certificates Issued by Category
Calendar Years 1984–1993

(Information taken from Table 17, U.S. Civil Aviation Statistics, Calendar Year 1993)

Year	Student	Recreational	Private	Helicopter	Glider	Total**	Gap***
1984	90,085	n/a	36,545	1,806	524	38,875	52,210
1985	86,060	n/a	35,402	2,105	537	38,044	49,016
1986	88,699	n/a	34,816	2,209	514	37,539	51,160
1987	85,611	n/a	42,278	2,217	542	45,037	40,574
1988	86,193	n/a	39,900	1,947	475	42,322	43,871
1989	87,427	n/a	35,360	2,240	336	37,936	49,491
1990	88,586	29	41,749	2,700	378	44,856	43,730
1991	82,205	87	49,580	3,344	487	53,498	28,707
1992	78,377	74	39,968	2,684	376	43,002	35,275
1993*	68,960	58	39,060	2,310	341	41,769	27,191

* 1993 figures are estimated
** Number of pilot certificates issues, excluding Commercial and ATP
*** Number of student certificates issued minus total pilot certificates issued

Training and Proficiency



from *Aviation Safety Letter*, Transport Canada Aviation

The following is an abridged version of a story forwarded by a reader. Space does not permit publication of the full tale, but we have tried to edit it to retain the details and the flavor that our writer wanted to portray—Editor, Aviation Safety Letter

The flight was conducted under night IFR in uncontrolled airspace. The weather at the point of departure met VFR requirements. The destination airport had no regular weather reporting. The closest weather reporting station 50 miles to the south was reporting 300 feet broken with 10 miles visibility in light snow, winds less than 5 knots, and a temperature of –5°C (23°F).

The crew were two experienced pilots with about 4,500 hours in type between them. Duty day was not a factor.

The aircraft was a light twin with all its anti/deicing equipment checked and serviceable.

The flight was dispatched in the early morning hours of a mid-December day in 1993. The 40-minute flight was at 17,000 feet in VMC with an outside air temperature of 0°C. Once in descent to destination, the current weather and runway conditions were passed to the crew by the airport manager. The crew completed an NDB approach and, after a two to three minute cloud penetration, was clear of clouds just above circling altitude. The runway was sighted a mile back, and the aircraft was in position to carry out a normal landing. Because of the obscuring light snow, the landing lights were delayed until short final, but when they were turned on, all ground contact was lost due to the haze of ice covering the windscreen. This was our first indication of clear icing. An overshoot was called, and as the lights were turned off, visual contact with the ground was regained. As the crew commenced a left circling procedure, they turned the windshield heat from LOW to HIGH and inspected

the wings for ice, and added 10 knots to the speeds because of ice seen on the wings.

On the downwind leg just before turning base the pilot flying called for the gear. *"Three gear down and locked (second pilot)."* *"Landing checks (pilot)."* The turn to base was initiated. *"STALL (second pilot)."* *"Max power, gear up, flaps up (pilot)."* Props went to max RPM, power was set to red line, gear was selected up, the flaps were up. (We had been in a 10-15 degree left bank when the stall occurred, and the speed was 30 knots above that published for a 30 degree bank turn in that configuration.) The aircraft was experiencing severe buffet and within a split second we were in a 45 degree left bank with a 10 degree nose down attitude. The pilot flying was desperately trying to level the wings, but we were no longer in controlled flight.

It was at this point that all awareness of time and sound was lost. The only sounds I was aware of were within the headset. Each pilot became focused on his own task while simultaneously maintaining an outstanding level of crew coordination. The pilot flying was determined to fly the airplane. From what I saw, he never gave up. As the situation went from bad to worse, he never gave up. I was not just along for the ride. Aware of the severity of the situation, I firewalled the throttles and in doing so overtorqued the engines by 558 pounds, or at least that's where the needles stopped. (We believe that the extra airflow from the high power setting was enough to get the tail flying again.) The pilot finally got the wings level by kicking full right rudder. By that time, we had turned more than 180 degrees and lost a lot of altitude. The buffet continued. We were now 5 to 10 knots below the published stall speed in the clean configuration. I kept talking to the pilot. *"Fly it out, just fly it out."* Lowering the nose to trade altitude for airspeed was not an option. The buffet finally stopped almost 35 knots above the published stall speed. We climbed to an altitude of 2,500 feet ASL before doing the after takeoff checks and before pulling the power back to the red line. I do not recall the rate of climb, but it had to be greater than 200 feet per nautical mile since we cleared all the obstacles.

The airport is located on an island. Just to the east the terrain rises about 100 feet and then drops down to the lake, where a narrow channel exists before the terrain rises sharply again on the other side. This channel runs for about two miles and varies from about 1/4 to 1/2 mile wide at its widest point, with power lines spanning its waters. At the far end, the channel widens to meet the lake. Two miles past the channel mouth, there is again higher terrain with a tower on top. Both pilots strongly believe that the aircraft went down this channel at a very low altitude and flew out past the tower at the end. As evidenced by the disappearance of the runway lights on the right side, we were obviously below the high ground on the right and the trees on the left as we recovered in a southwesterly direction.

As we continued the climb toward home base where conditions were VMC, a PIREP was filed with the FSS of severe clear ice in the vicinity. We encountered a secondary buffet at 40 knots above the published stall speed. With wings level, we flew out of the buffet and continued homeward.

The approach at home was flown wide and fast to a safe, but firm, landing. After shutdown we examined the aircraft for evidence of ice. Even after an hour's flight in clear air, ice covered a majority of the airframe. There was ice where I had never seen it before, even on the raised paint of the aircraft registration on the underside of the wing.

In analyzing our flight, we agreed that *"we would not do anything different."* The approach was flown in accordance with the approach plate from the company approved routes. There was no deviation from standard operating procedures. The current altimeter setting was used. There was no report of freezing precipitation. The circling was done maintaining visual contact with the runway environment at circling altitude. Had we not been at circling altitude, you would not be reading this. I suppose that the ice on the windshield should have been a red flag because there was no other warning of the impending stall.

I would also say from reading the report of the Air Florida 737 accident at the 14th Street bridge in Washington, DC, that the application of full power past the engine gauge restriction is probably the greatest factor that saved our lives.

The flight deck environment was, despite all that was going on, very calm—two people having total trust in each other's abilities, knowing the aircraft and its systems and their limitations, and knowing what you can do if you have to. It saved out lives.

I think I can safely say that both pilots have renewed respect for the concept of proper crew coordination, the flying profession, and, most of all, ice. ■

Some Rules of Learning and Training

by Lauren Basham, *Operations Aviation Safety Inspector*

Rule 1: The Law of Readiness

When a person feels ready to act or learn, the student acts or learns more effectively. A trainee that is ready to learn feels a need or desire to master the lesson and feels annoyed if prevented from doing so. In a state of readiness a trainee is not easily distracted by other stimuli. This mind-set may weaken to the point where continuing to act in the same direction will become annoying. Just before this point the instructor should take steps to regenerate readiness.

Rule 2: The Law of Effect

Here is another familiar one. It means, simply, you can catch more flies with honey than with vinegar. People learn better in pleasant surroundings. Conversely, an attitude of fear, gruffness, unpleasantness, all interfere with learning. This is not speculative; it has been proved in established psychological experiments.

Rule 3: The Law of Exercise (Repetition)

The more often activity is repeated, the more likely it is to be learned. The more often a set of facts is repeated, the more likely they are to be learned. There are many exceptions to this law, but it is usually true. *The drill should be as much like the activity which will be used as is possible.*

THE MORAL: Do not assume, because you have stated some facts to the trainees, that they are automatically learned and remembered. Instead, restate them, summarize them. Here is a good training precept to follow:

Tell 'em what you are gonna tell 'em
Tell 'em
Tell 'em what you told 'em

Also, do not assume that because your students can successfully demonstrate a skill or ability once, they have mastered it. Require them to repeat it—to "overlearn" it—before you can really assume that they have learned it.

Rule 4: The Law of Recency

The fresh and more recent a subject, the more we remember about it. We tend to come away from a good class session with a sizable recollection of what we heard and saw. As time goes by, our memory grows dimmer and dimmer. Finally, we remember only a small portion of what we thought we had learned.

Rule 5: The Law of Intensity (Vividness)

The more vividly a subject is presented, the better it will be learned. Think back upon your old school days—the dramatic chemistry experiments, with their change of colors, igniting of gasses and explosions, etc., are incidents you can still recall.

Rule 6: The Law of "Learning by Doing"

This is the most important law of all. The great teacher and philosopher, John Dewey, was the exponent of this law of learning. Want to thoroughly learn to do something? Then do it. Do it repeatedly. Do it under the supervision of someone who can instruct and help you.

This kind of learning—learning by doing—will provide by far, faster, more effective results for you, than would the most brilliant lecture, or even a good discussion with the other trainees on how something should be done.

Rule 7: The Law of Sensory Appeals

This is a familiar one. People learn better when you appeal to all the senses. One estimate holds that trainees remember:

10% of what they hear
20% of what they read
30% of what they see
70% of what they do

THE MORAL: This does not hold true for all people and all situations. The example listed is probably exaggerated. However, the thing to remember is never conduct a class session without using as many visual aids as possible. At the very least, have a blackboard or easel and use it to illustrate the points you make orally. ■

Primary Category Aircraft

by Bert Labbe

A primary category aircraft is of simple design and is intended exclusively for pleasure and personal use. A primary category aircraft (airplanes, gliders, rotorcraft, manned free balloons, etc.) may be unpowered or powered by a single, normally aspirated engine with a 61-knot or less stall speed limitation for airplanes, as defined by FAR § 23.49, and a six-pound per square foot main rotor disc loading limitation for rotorcraft. A primary category aircraft may have a maximum certificated weight of no more than 2,700 pounds, a maximum seating of four, and an unpressurized cabin. Although a primary category aircraft may be available for rental and flight instruction under certain conditions, the carrying of persons or property for hire is prohibited.

FAR § 21.184(a) allows an applicant to obtain a special airworthiness certificate-primary category when the applicable provisions of FAR Part 21 are met.

FAR § 21.184(b) allows an applicant to obtain a special airworthiness certificate-primary category for an imported aircraft type certificated under FAR § 21.29 provided certain conditions are met.

FAR § 21.184(c) allows an applicant to exchange a standard airworthiness certificate for a special airworthiness certificate-primary category. The conversion will be made through the normal supplemental type certificate (STC) process.

Airworthiness Certificates

A primary category aircraft is eligible for a special airworthiness certificate-primary category under FAR § 21.184 or an experimental certificate under FAR § 21.191.

Advantages of the Primary Category Aircraft

The intent is to speed up and make less costly the type certification process, with minimum FAA participation;

i.e., economic interest for the type certificate (TC) holder. Also, it permits the pilot-owners to do certain maintenance procedures, including inspections, on their own aircraft after receiving the appropriate training.

Special Inspection and Preventive Maintenance Program

Under FAR § 21.24(b) the applicant may include a preventive maintenance program, as part of the aircraft's type design or supplemental type design [FAR § 21.31(d)].

These preventive maintenance items are in addition to the preventive maintenance tasks that currently exist in FAR Part 43, Appendix A (c)(1-30).

Who May Perform Special Inspections and Preventive Maintenance on Primary Category Aircraft?

A private pilot-owner with a certificate of competency for that make and model. [FAR Part 43, Appendix A(c)(30)]

An appropriate certificated maintenance technician. [FAR Part 65/proposed FAR Part 66]

Appropriately rated repair stations.

Who May Be Trained for the Special Inspections/Maintenance?

Pilot-owners who are licensed private pilots.

What Maintenance May Be Performed by the Pilot-Owner with a Certificate of Competency for that Aircraft Make and Model?

In addition to the preventive maintenance tasks in FAR Part 43, Appendix A, the pilot-owner may conduct maintenance in accordance with a special inspection and preventive maintenance program approved as a part of the aircraft's type design.

These items will not allow pilot-owners to do their own annual inspections, work on engines, or accomplish any inspection or repair required by an airworthiness directive.

Who May Train?

A FAR Part 147 school with the approval to teach special courses in the performance of special inspection and preventive maintenance programs. [FAR § 147.21(e)]

The holder of the type certificate for the pilot-owner's aircraft. [FAR § 21.163(b)]

An entity that has a course approved by the Administrator. Since the instructor must have an Airframe and Powerplant rating, this opens the door for the Aviation Maintenance Technician.

What Are the Record Keeping Requirements?

All special inspection and maintenance programs will be subject to the record keeping requirements that exist for other aircraft under the regulations.

If a pilot-owner operates a primary category aircraft that has had an inspection or maintenance task that is part of its special program performed improperly, certificate action may be taken against that pilot-owner.

Primary Category Aircraft Operating Limitations [FAR § 91.325]

The carrying of persons or property for compensation or hire is prohibited.

No person may operate a primary category aircraft that is maintained by the pilot-owner under an approved special inspection and maintenance program except the pilot-owner or a designee of the pilot-owner, provided the pilot-owner does not receive compensation for the use of the aircraft.

For more details on primary category aircraft, see Advisory Circular (AC) 21-37. ■

Mr. Labbe is an airworthiness inspector in the Windsor Locks, CT Flight Standards District Office. This article also appeared in AIRWAVES, *a quarterly publication of the Windsor Locks FSDO.*

The Crash

Continued from page 15

Some people may call accident investigation "Monday morning quarterbacking." It may seem that way, but we can only attempt to recreate the "chain of events" leading up to an accident. The one discussed here is a classic.

At any time the chain could have been broken, and a successful flight, an enjoyable vacation, and a pleasant experience could have been had by all concerned. The pilot could have taken the time to be properly qualified to land at a short field and to consult the A/FD or other charts to determine the condition of the runway. He could have practiced go-around procedures with that instructor who charged $30 an hour and who didn't have anything to teach him except maybe establishing criteria for initiating a go-around. Taking any one of these steps may have prevented this accident.

Accidents are tragic. There is always a loss, even when everyone survives. Accidents result in loss of dignity and property, sometimes even loss of life. We should all examine accidents and their causes. By learning from the problems of others, we can prevent an accident ourselves.

Avoid the tragedy of having an accident when you can learn from the mistakes others make! ■

Mr. Jones, formerly the Safety Program Manager at Winston-Salem, NC FSDO, is now an aviation safety inspector in the Richmond, VA FSDO.

AirspaceCORNER

I am writing to comment about your answer to Paul Sternberg's letter in your September 1994 issue.

Your answer follows FAR §91.130 and the AIM until (in my opinion) the sentence that says, "and ATC did not tell you to remain outside of the Class C airspace."

Now regarding Class B airspace, FAR §91.131(a)(1) states, "The operator must receive an ATC clearance from the ATC facility having jurisdiction for that area before operating an aircraft in that area." FAR §91.130 which covers Class C airspace contains no such wording. Therefore for an aircraft operating VFR in VMC and otherwise in compliance with Part 91, what is ATC's regulatory basis for denying that aircraft entry or transit through Class C airspace? Since only radio communications is required and not a clearance, I don't see that FAR § 91.123 would apply.

Donald Smith
Miami, FL

The best explanation is contained in the *Aeronautical Information Manual* (AIM), paragraph 3–13. The FAR says a pilot must establish radio communications with the ATC facility providing ACT services before entry and maintain those communications while in Class C airspace. The key is the establishment of radio communications and compliance with ATC instructions. As shown in AIM 3–13d3 Notes 1, 2, and 3, if ATC responds to a radio call by using the aircraft's call sign, communications have been established with that aircraft and the pilot can enter the Class C airspace. But if workload or traffic conditions prevent immediate provision of Class C services, the controller will inform the pilot to remain outside the airspace.

If ATC does not use the aircraft call sign when responding to an aircraft, radio communications have not been established and the aircraft cannot enter the Class C airspace. As shown in the example given in the AIM, "Aircraft calling Dulles approach control, standby." Since ATC did not establish radio communications with the aircraft by using its call sign, communications have not been established, and the aircraft cannot enter the Class C airspace.

• Accident Info Correction

In the May/June issue of *FAA Aviation News* ("Special Safety Rules for R–22/R–44 Helicopters"), some of our statistics for the number of R–22 and R–44 accidents in the U.S. in 1994 were incorrect. We stated that six fatal accidents occurred between April and June. The FAA Office of Accident Investigation has provided the following correct statistics:

1994 R–22/R–44 Accidents in the U.S.

0 Total R-44 accidents
23 Total R-22 accidents
4 Fatal R-22 accidents (3 were wire strikes; 5 fatalities)

There was one airborne rotor/airframe contact accident (fatal), and two contact events occurred during hard landings; i.e., the rotors flexed downward on hard contact.

We apologize for the error.

• Currency Check

As a private pilot I have not made the three takeoffs and landings in the past 90 days. Also, there is no CFI readily available to fly with me. Can I fly with a safety pilot with private pilot certificate, current medical, and currency in the type and class of aircraft I will be flying, but who is not a CFI? The other pilot would make sure I don't do myself or anyone else any harm and help soothe my nerves. This seems to be safer to me than flying solo, and since a second pilot could legally manipulate the controls, this should be permissible under the FAR.

Tim Brown
Anderson, SC

Your interest in safety is commendable. FAR § 61.57(c) refers in part to being pilot in command and carrying passengers. As such, if another private pilot (read passenger since the pilot is not required to be onboard) is in the aircraft, you cannot be pilot in command (PIC). The other current pilot has to be PIC in the situation you outlined. You can fly the aircraft and log the time and takeoffs and landings you make while manipulating the controls if appropriately rated. The time would be loggable as (here we go again confusing people) PIC time. Once you have made your three touch and go's and become current, you and the pilot in command could agree to transfer pilot in command authority to you. The question of being pilot in command of a flight and the transferability of that authority while in flight is a very serious matter both under the FAR and in court regarding the question of potential liability in case of an accident or incident

• Ex-Military Jets

I have been reading the FAA Aviation News for about a year now. I first ran across it from the bookshelf at the Yankee Air Force Museum where they restore WWII to present aircraft for both static displays and few for flight. I renewed by subscription because I like reading the various information provided within.

However, with the past year many goings on have occurred in the ex-military jet flying community and with the FAA. Your publication however has not mentioned one bit about the goings on. I for one would like to hear the FAA's stand on ex-military jets. In addition, I

FAA AVIATION NEWS welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Send letters to Editor, FAA Aviation News, AFS–810, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267–9463. INTERNET address: Phyllis_Duncan@mail.hq.faa.gov

would like to see what the FAA holds for the future. Hopefully, it would be positive since I am restoring an ex-military jet which I own for flight. Also, the newspapers and TV sheds a less than positive image on these aircraft.

So, I hope to see something positive and the FAA's views on former military jets in your publication. Please keep up the good work.

Scott Vetter
Canton, MI

We have not addressed the ex-military jet issue because it is such a small community with very good internal information channels such as the Experimental Aircraft Association (EAA) Warbird Division.

The number of ex-military jets flying in the U.S. is expected to increase yearly as the number of ex-military prop aircraft continues to decrease through age and accidents. Also contributing to the increase in the number of ex-military jets flying in the U.S. is the importation of such aircraft from other countries.

As with any type of aircraft, the FAA's concern is public safety. Since the July 1993 moratorium about airworthiness certification of non-U.S. manufactured experimental aircraft and the various FAA notices and guidance that followed, FAA has recently published a new order, FAA Order 8130.2C, Airworthiness Certification of Aircraft and Related Approvals, that deals with the certification and operation of aircraft under the experimental purpose(s) of research and development, exhibition, and/or air racing; and issuance of special flight authorizations for non-U.S. aircraft that should answer most of your questions about how to certificate and operate the aircraft.

Individuals involved with ex-military aircraft should contact their local Flight Standards District Office for complete information and assistance.

• Battery Replacement

Regarding "ELT Setup" in the July-August 1994 issue, Mr. McLaughlin indicated that the batteries were dated 1/97 and "must be replaced on or before that date" and "that would give them a five-year life". I don't understand the relationship of "1/97" and "five year life" but regardless of how extensive the battery manufacturer's expiration date may be, FAR § 91.207 requires that the battery be replaced "When 50 percent of their useful life. . . has expired."

Richard J. Lewis
Madeira Beach, FL

The "five-year life" in this case is based upon buying batteries with an expiration date of 1/97 in 1992. As Mr. McLaughlin stated in his letter, the batteries must be replaced on or before their expiration date, in this case 1/97, to comply with the manufacturer's instructions.

You're right about having to replace ELT batteries when 50 percent of their useful life or useful charge, in the case of rechargeable batteries, has expired as established by the transmitter's manufacturer. Batteries must also be replaced when they have been in use for more than one cumulative hour. Pilots should read both FAR § 91.207 and their aircraft's ELT information to determine when to replace their ELT batteries. The FAR also requires that the replacement date or recharging date be marked on the ELT battery as well as being entered in the aircraft's documents.

• Second Class Medicals

This comment is in regard to FAR § 61.71, Graduates of certificated flying schools: Special rules. Within this regulation, paragraph (a), is a requirement that applicants who are graduates of certificated flying schools, i.e.: FAR Part 141 approved schools, who apply for a flight test for an instrument rating must meet several of the requirements of FAR § 61.123, Eligibility requirements: general. Among those requirements is FAR § 61.123(c). This paragraph requires that the applicant "Hold at least a valid second-class medical certificate. . . . "

The result is that a person holding a Private Pilot Certificate, who applies for a flight test for the instrument rating and who is a graduate of a FAR Part 141 Instrument Rating Course, must possess at least a valid second-class medical certificate.

This requirement makes no sense, since an instrument rating applicant who applies under FAR Part 61 must only possess a valid third-class medical certificate. Appendix C of FAR Part 141 provides for an instrument rating course. FAR § 141.55 does not require a specific class of medical for enrollment. If the applicant has no desire to continue his or her training to obtain a commercial certificate, why should the applicant be burdened by the requirement to obtain a higher class of medical certificate? Lastly, there is no ongoing requirement for an instrument rated private pilot to maintain anything other than a third class medical certificate to exercise his or her privileges as an instrument rated pilot, so why require a higher level of medical certificate for initial certification?

I suggest that FAR § 61.71(a) be revised to read in part ". . . except paragraphs (c), (d), and (e) thereof."

Thomas E. Miller
Saratoga County Airport, NY

You are right. The proposed revision to FAR Part 61 due for release later this year removes the second-class medical requirement for FAR Part 141 Instrument courses.

New Icing Guidance for Small Aircraft

FAA has published two new icing advisory circulars (AC): AC 135–16, "Ground Deicing and Anti-Icing Training and Checking," and AC 135–17, "Pilot Guide, Small Aircraft Ground Deicing." The AC's provide guidance on how operators can comply with the latest FAR on icing. Now is the time for interested operators, pilots, and maintenance personnel to obtain copies of the AC's in time to implement the information before winter.

Although designed for FAR Part 135 operators, the AC's provide important information about ground deicing and anti-icing training, the loss of aircraft performance because of icing, the new icing rules, deicing equipment, deicing methods, and anti-icing and deicing fluids for all operators. The AC's provide valuable information on winter operations for everyone that operates, repairs, services, and flies aircraft in icing conditions. It also provides an overview of the "clean aircraft" concept for those not familiar with the term. AC 135–16 provides guidance on training programs as well as other operational data.

AC 135–17, a 6-by-9 inch, flight-bag-sized booklet designed for pilots, discusses deicing and anti-icing fluids with charts, pilots actions, fluid types and characteristics, airframe dangers, etc. The Pilot Guide also discusses the human dangers that some of the fluids may pose. AC 135–17 also points out important winter preflight items that some pilots may not have thought of and reviews the many different ways of deicing an aircraft including some potential dangers if the techniques are not done properly. It also lists holdover times by types of fluid including fluids used both here in North America as well as in Europe.

Although the AC's state the pilot in command (PIC) is ultimately responsible for the safety of his or her flight, the new AC's provide the PIC a means of making an educated go/no-go decision. Pilots are reminded to comply with the instructions and guidance found in their own aircraft manuals and operating procedures when dealing with anti-icing and deicing issues. These AC's provide one means, but not the only means, of complying with applicable FAR.

Interested parties can obtain copies of the AC's through their local Flight Standards District Office while quantities last, or by contacting the U.S. Department of Transportation, M.443.2, Washington DC 20590.

Budget Action Could Result in FAA Layoffs, Delays, and Safety Degradation

FAA Administrator David Hinson said recently that plans in Congress to balance the budget by 2002 would mean "we could be forced to terminate literally thousands of employees who help maintain the national airspace infrastructure. Losses of this scale could mean flight delays that would cost airlines billions of dollars a year. Such layoffs could include technicians and engineers involved in system maintenance as well as controllers, inspectors, and aviation security positions.

The seven-year budget solution passed by Congress in June could result in Fiscal Year 2002 funding for FAA at a level 19% lower than Fiscal Year 1995. Enplanements for 2002, however, are forecast to increase by 35%, with commercial operations increasing by 18%.

Hinson said without adequate staffing, FAA "could not participate as fully in accident investigations. . . . Many of the inspection and certification services we now perform would have to be eliminated." By Fiscal Year 1999 FAA may have to close more than 100 Level 1 towers and possibly start closing Level II tower also. By Fiscal Year 2000, the shortage of qualified controllers could create economic hardships for airlines—delays could be to the tune of 100,000 a year.

Hinson also predicted that FAA's most important projects "would take a hit. We would be forced to slow the installation of new weather and windshear detection systems and delay equipment improvements in towers, centers, and TRACONS. Even the most dedicated budget cutters," he continued, "should be able to foresee the consequences—crowded airspace, congested airports, more delays, decline in an industry which is still recovering financially, and the inevitable loss of jobs."

Effects on safety are not as easy to forecast, and whereas some may welcome fewer inspectors conducting inspection and surveillance or enforcement duties, fewer inspectors would also mean longer and longer waits for certification services, from new operator start-up, to required checks, to initial CFI certification.

"First Flight" Video for Aircraft Builders

The Federal Aviation Administration and the Experimental Aircraft Association(EAA) have just released the new 23-minute video, "First Flight in Your Homebuilt."

The FAA-EAA production is targeted to the aircraft builder who is ready to test a complete project. NASA Space Shuttle Commander and EAA member Robert "Hoot" Gibson is the featured host, covering topics such as what to expect during a first flight, planning a flight, and how to deal with problems.

"First Flight" is being distributed to FAA Flight Standards District Offices (FSDO), state aviation agencies, and EAA Flight Advisors. It is also available through the EAA's video catalog at 1–800–843–3612 for $9.95 plus shipping and handling.

Bermuda and U.S. Sign Aviation Safety Accord

The Federal Aviation Administration and the Bermuda Government signed an air traffic control memorandum of understanding. In effect since June 1st, the new agreement ensures continued aviation safety for aircraft operating in and around Bermuda airspace.

Born out of the planned closure of the U.S. Naval Air Station in Bermuda, the document creates an air traffic control responsibility partnership between the FAA and Bermuda.

AvNEWS/BRIEFS

AOPA Sets New Fly-in Attendance Record

The Aircraft Owners and Pilots Association in Frederick, MD, reports a record breaking attendance of 5,000 at its 5th Annual Fly-In June 17. More than 500 aircraft came in for the event, some as far away as North Dakota.

The AOPA Air Safety Foundation held a series of extremely popular standing-room-only seminars.

Twelve FAA controllers handled the unprecedented volume of air traffic at AOPA's home field from a temporary control tower. FAA's Leesburg Automated Flight Service Station provided on-site departure briefings.

More than 1,000 attendees visited the FAA Flight Standards and *FAA Aviation News* exhibit at the event. The 6th AOPA Fly-in is scheduled for Saturday, June 15, 1996.

Scenes from 5th AOPA Fly-In

Margaret Haldane

Air Show Calendar for November

The Half Moon Bay Airport Pilots Association of Half Moon Bay, CA, has scheduled its "California Coast Airfair '95" for September 30th and October 1st. Joe Reid, this year's Airfair chair, plans ground displays and fly overs of military aircraft, warbirds, historic aircraft, homebuilts, and foreign aircraft. Individual fly-ins, food, and family activities are in the program, and Joe can be reached at (415) 726–7655.

The Chamber Daytona Beach and Halifax Area will hold this year's Daytona Skyfest in Daytona Beach International Airport November 4 and 5. USAF Thunderbirds, Farewell Flight of the Eagles Aerobatic Team, Shockwave Jet Truck, military aircraft, parachute team, and military jet displays are some of the attractions scheduled for the event. Event and hotel information is available from Daytona Skyfest staff at 1–800–854–1234.

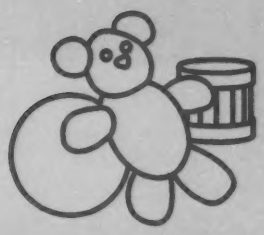
NASA/FAA Sponsor Aviation Design Competition

NASA and the FAA are sponsoring a national General Aviation Design Competition for the 1995–96 academic year. Competition coordinator, the Virginia Space Grant Consortium, has set January 31, 1996, the deadline for letters of intent to participate.

The competition is a forum to foster university students to be a part of a major national effort to rebuild the U.S. general aviation sector. It is open to undergraduate and graduate teams at U.S. aeronautic and engineering universities. Working with faculty advisors, these teams will address design challenges for general aviation aircraft.

The "General Aviation Design Competition Guidelines 1995–96" is available from Ms. Mary Sandy at the Virginia Space Grant Consortium, Old Dominion University, Peninsula Center, 2713–D Magruder Boulevard, Hampton VA 23666, telephone (804) 865–0726, Fax:(804) 865–7965. (E–mail: msandy@pen.k12.va.us)

Tips for Parents Using Child Restraints on Aircraft



Proper use of an approved child restraint system (CRS) on an aircraft enhances child safety in the event of an accident. A CRS also provides protection for a child during turbulence. The FAA strongly recommends that all children who fly, regardless of their age, use the appropriate restraint based on their size and weight.

Before you fly

- Check with the airline to find their busiest days and times. By avoiding these times you are more likely to be on a flight with an empty seat next to a parent. In many cases airlines will allow you to seat your child under two years of age in a child restraint in the empty seat without having to pay the airline fare for the child. Ask your airline for its policy regarding an empty seat.
- Ask the airline if they offer a discounted fare for a child traveling in a CRS. If you buy a ticket (discounted or full fare) for your child, you are guaranteed that they will have a seat and that you will be able to use the CRS.
- If you purchase a ticket for your child, reserve adjoining seats. A CRS should be placed in a window seat so it will not block the escape path in an emergency. A CRS may not be placed in an exit row.
- Check the width of your CRS. While airline seats vary in width, a CRS no wider than 16" should fit in most coach seats. A CRS wider than 16" is unlikely to fit. Even if the armrests are moved out of the way, a wide CRS will not fit properly into the frame of the aircraft seat.
- If you need to change planes to make a connecting flight, it can be very challenging to carry a CRS, a child, and other items through a busy airport. Most airlines will help parents make the connection. Request that the airline arrange for assistance in your connecting city.

Choosing the correct CRS

Always follow the manufacturer's instructions regarding use of the CRS. Do not place a child in a CRS designed for a smaller child. Be sure that any shoulder straps in the CRS come out of the CRS seat back above the child's shoulders. Tighten the aircraft seatbelt around the CRS as tightly as possible.

- **Under 20 pounds**—Use a rear facing child restraint.
- **From 20 to 40 pounds**—Use a forward facing child restraint. Although the safety technology of forward facing carriers in aircraft is still developing, current devices offer dramatic improvements in protection compared to lap held and/or unrestrained children.
- **Over 40 pounds**—A child over 40 pounds may safely use an aircraft seatbelt and does not require a CRS.

Reminder

Use an approved CRS when traveling to and from the airport by automobile. Booster seats and harness vests do not provide adequate protection in an aircraft, but they do enhance safety in automobiles. Many airlines do not allow the use of booster seats on their flights. These devices may be checked as baggage. In the United States, supplemental lap restraints, "belly belts," are banned from use in automobiles and aircraft.

For more information call:
1–800–FAA–SURE (1–800–322–7873)

Online access is available through: NTIS FedWorld by dialing (703) 321–3339. The filename is CHILDTIP.TXT in the FAA data library. Additional FedWorld access through:

INTERNET: ftp.fedworld.gov; TELNET: Fedworld.gov; World Wide Web: www.fedworld.gov. Members of CompuServe may download from Library 13 (Airlines) of the TRAVEL FORUM (GO TRAVEL) or Library 15 (FAA) of the AVSIG FORUM (GO AVSIG). The filename is CHILD.TXT in both locations.

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